

SOAP and Sanitary *Chemicals*

In this issue...

Buyer's Guide Section

U. S. Government
Specifications

Perfuming Material
Specifications

CSMA Aerosol Test Method

Revised Peet Grady Method

CSMA Methods of Test for
Resistance of Textiles to
Insect Pests

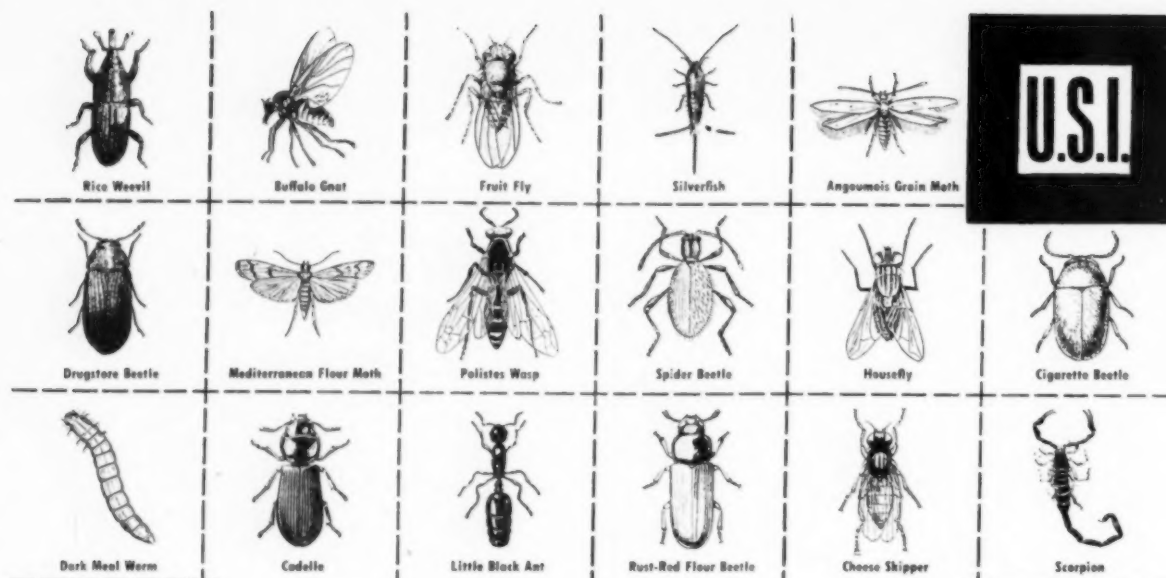
Trade Association Officials

"Soap & Sanitary
Chemicals" Index

1952 BLUE BOOK and Catalog Edition

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Annual Buyers' Guide
*for Manufacturers and Jobbers
of Soaps, Detergents, Chemical Specialties,
Janitor Supplies and Equipment.*



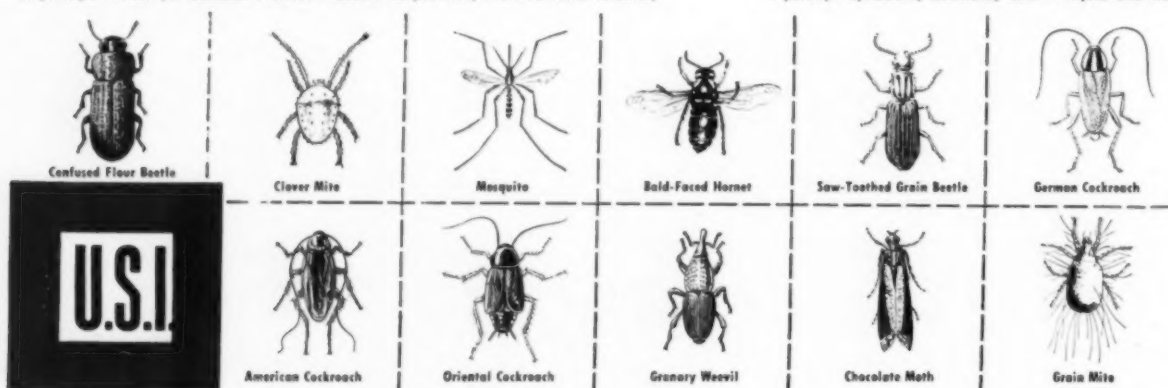
Pyrenone* kills 'em all

SPECIFICATIONS FOR THE MOST COMMONLY USED PYRENONE CONCENTRATES

PRODUCTS	Active Ingredient Content grams/100 c.c.			Active Ingredient Content % by Weight			Specific Gravity at 20°/20°C	Weight per gal @ 20°C	Color (Gardner-Holt Std. 1933)	Approx. Flash	Min. Solu- bility in Petroleum Base Oil	Freon Insolu- bles (Max.)
	Pyreth- rins	Piperonyl Butoxide (Technical)	Piperonyl Butoxide	Pyreth- rins	Piperonyl Butoxide (Technical)	Piperonyl Butoxide						
Pyrenone Roach Spray Concentrate	1.2	6.0	—	1.49	7.48	—	.802 (± .005)	6.67	9.5-10.5	180-190°F	100%	—
Pyrenone K.D. Concentrate	1.2	3.0	—	1.50	3.76	—	.796 (± .005)	6.62	8.5-9.5	180-190°F	100%	—
Pyrenone Aerosol Concentrate 40-5	—	—	—	5.0	40.0	—	.903 (± .015)	7.51	12-13	180-190°F	100%	0.3%
Pyrenone Aerosol Concentrate 30-6	—	—	—	6.0	30.0	—	.883 (± .015)	7.35	12-14	188-192°F	100%	—
Pyrenone Aerosol Concentrate 20-8	—	—	—	8.0	20.0	—	.865 (± .010)	7.20	12-14	180-190°F	100%	0.4%
Pyrenone O.T. 50-5	5.0	50.0	—	5.31	53.19	—	.94 (± .025)	7.82	12-14	200-215°F	100%	—
Pyrenone R.E. 50-5	5.0	—	50.0	5.26	—	52.63	.95 (± .03)	7.65- 8.15	Dark Amber	180-200°F	Cloudy to Clear	—
Pyrenone R.E. 60-3	3.0	—	60.0	3.12	—	62.50	.96 (± .03)	7.74- 8.24	Dark Amber	180-200°F	Cloudy to Clear	—
Pyrenone R.E. 66-5	—	—	—	5.0	—	66.67	.982 (± .03)	8.2	Dark Amber	180-200°F	Cloudy to Clear	—
Pyrenone 20 New	0.5	4.0	—	0.62	5.03	—	.795 (± .005)	6.61	9-10	180-190°F	100%	—

*Pyrenone is a registered trade mark of U. S. Industrial Chemicals Co., Division of National Distillers Products Corporation, 60 East 42nd Street, New York 17, New York. Branches in principal cities. (In Canada: Natural Products Corporation, Montreal and Toronto.)

Other Insecticide Products of U. S. I. include: Piperonyl Butoxide, Pyrethrum, Triple Mix Repellent—liquid and cream, Piperonyl Cyclonene, Rotenone, CPR — liquid and dust.



MONEY SAVING TIP!

funnel all your fatty acid needs
into One Purchase



...says Mr.
fatty acid



Super market for the fatty acid shopper . . . that's what you might call the vast and varied stocks always available from Archer-Daniels-Midland.

In vegetable fatty acid (see chart at right), ADM can supply many types . . . linseed, soya, cottonseed, coconut, corn, chinawood and others. And anywhere you "shop" in ADM's broad line you'll note a common denominator that fits every type of fatty acid offered. That element is unexcelled quality.

ADM can also supply a complete array of oils—soya and linseed and fish, either raw, refined, bodied, blown or chemically modified.

What's more, you make big savings using ADM's *combined-purchase* and *combined-shipment* plans. You can order your needs shipped in mixed carloads, compartment tank cars, tank wagons, or in trucks. Or, order LCL shipments from 26 strategically located ADM warehouses. It's a big step toward lower prices, lower freight costs, and smaller inventories.

Take the Scientific Shortcut with

ADM fatty acid ACIDS

You can always follow the market with the broad line of
ADM VEGETABLE FATTY ACIDS

FATTY ACID TYPE AND GRADE	PROTECTIVE COATINGS	SYNTHETIC RESINS	INKS	PUTTY AND CAULKING COMPOUNDS	METALLIC SOAPS	LIQUID SOAPS	WAXES AND POLISHES	INSECTICIDES AND DISINFECTANTS	LUBRICATING GREASES	COSMETICS	PHARMACEUTICAL
LINSEED											
Water White	X	X	X	X	X	X	X	X	X		
Regular	X	X	X	X	X	X	X	X	X		
SM-500	X	X	X	X	X	X	X	X	X		
SM-600	X	X	X	X	X	X	X	X	X		
Essential Unsaturated Free Fatty Acids	X	X	X	X	X	X	X	X	X		X
SOYA											
Water White	X	X	X	X	X	X	X	X	X		
Regular	X	X	X	X	X	X	X	X	X		
RO-4	X	X	X	X	X	X	X	X	X		
RO-10	X	X	X	X	X	X	X	X	X		
RO-11S	X	X	X	X	X	X	X	X	X		
MIXED VEGETABLE											
RO-8	X	X	X	X	X	X	X	X	X		
CORN-SOYA Double-											
Distilled				X	X	X	X	X	X		
CORN Double-											
Distilled				X	X	X	X	X	X		
COTTONSEED Double-											
Distilled	X			X	X	X	X	X	X		
COCONUT Double-											
Distilled	X			X	X	X	X	X	X		
CHINAWOOD	X	X	X								

ARCHER-DANIELS-MIDLAND COMPANY
600 Roanoke Building • Minneapolis 2, Minnesota

● Please send information on:

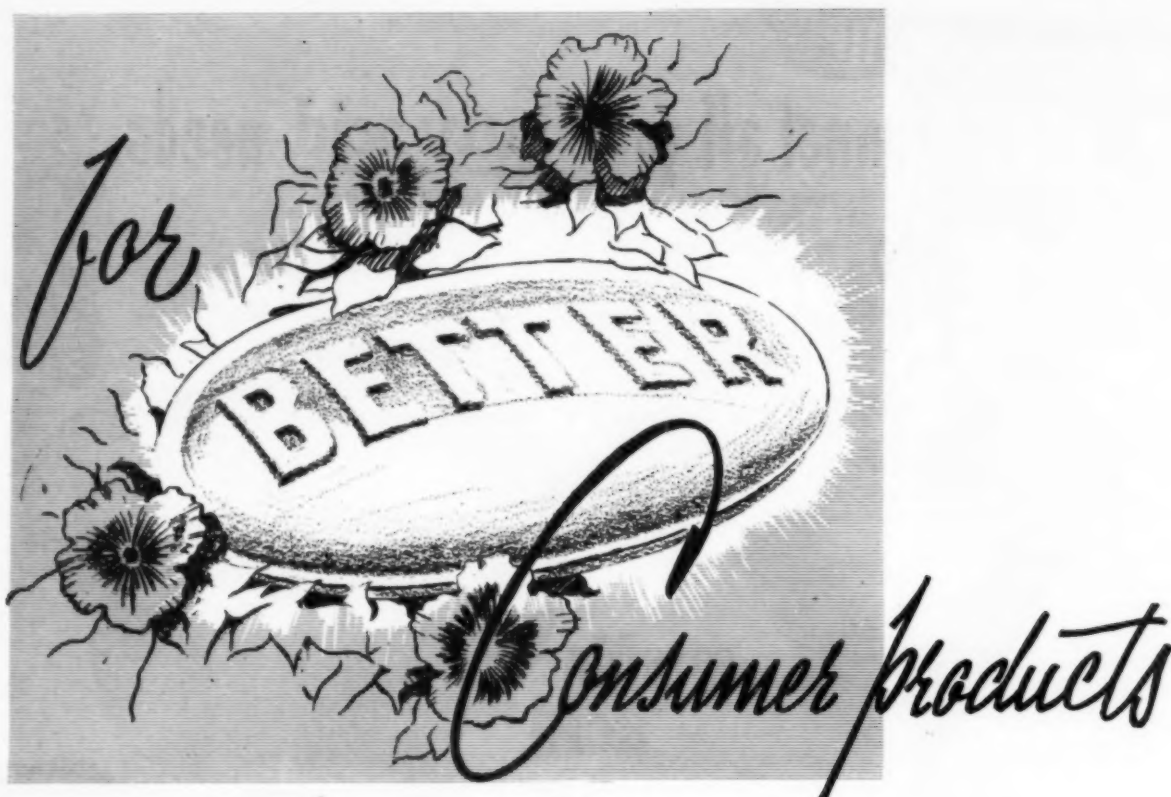
_____ fatty acids.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



USE UNGERER BASIC MATERIALS
FOR PERFUMES AND PERFUME SPECIALTIES

*specialists in
odors for fine hand,
scouring, liquid soaps,
soap cleaners and
similar products*

*Send for your
free copy today!*



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NEW YORK 13

Plant and Laboratories: TOTOWA, N. J.

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ST. LOUIS

LOS ANGELES

ATLANTA

1952
BLUE BOOK
and Catalog Edition of
SOAP & SANITARY CHEMICALS

●

AN ANNUAL BUYERS GUIDE,
DIRECTORY AND REFERENCE
VOLUME FOR MANUFACTURERS,
CONVERTERS AND JOBBERS OF
SOAPS, DETERGENTS, INSECTI-
CIDES, DISINFECTANTS, POL-
ISHES, CLEANERS, CHEMICAL SPE-
CIALTIES, JANITOR SUPPLIES
AND EQUIPMENT.

Twenty-Fifth Edition

ISSUED ANNUALLY BY

MacNair-Dorland Company

254 West 31st Street

New York 1, N. Y.



Fact to Remember

WHETHER SUPPLY IS LONG OR SHORT...



*is the Only integrated producer
of all these
basic ingredients for soapers*

CAUSTIC SODA

Liquid 50% Standard and Rayon Grades

Liquid 70-73% Standard Grade, Flake and Solid, 76% Na₂O

CAUSTIC POTASH

45% Liquid, Flake and Solid

NATURAL SODA ASH

Light and Dense

Crude Sodium Sesquicarbonate	Phosphated Caustic Soda
Acid Sodium Pyrophosphate	Chlorinated Sodium Phosphate
Disodium Phosphate	Dipotassium Phosphate
Monosodium Phosphate	Monopotassium Phosphate
Sodium Tripolyphosphate	Potassium Phosphate Liquor
Tetrasodium Pyrophosphate	Tetrapotassium Pyrophosphate
Tripotassium Phosphate	

Mixtures containing phosphates, alkalis,
detergents, etc., formulated to order.

WESTVACO CHEMICAL DIVISION FOOD MACHINERY AND CHEMICAL CORPORATION

161 EAST 42nd STREET, NEW YORK 17, N. Y.

CHICAGO, ILL. • CLEVELAND, OHIO • CINCINNATI, OHIO • CHARLOTTE, N. C.
ST. LOUIS, MO. • POCATELLO, IDAHO • LOS ANGELES, CALIF. • NEWARK, CALIF.



With basic, growing Alkali and elemental Phosphorus production, Westvaco can give you the kind of quality and service on which you can build your business—in good times and bad.

You'll get delivery "as promised", practical Technical Service on formulations, handling, etc., and a friendly interest by men who can give you a prompt, concise answer on your alkali-phosphate or dry mixture requirements.

Contract or spot, it pays to check Westvaco first!

Foreword

THIS issue of the BLUE BOOK and Catalog Edition of SOAP & SANITARY CHEMICALS represents the twenty-fifth consecutive year of publication of this standard buying guide for manufacturers, converters, repackers and distributors of soaps, detergents, cleaners, insecticides, disinfectants, floor waxes and polishes, aerosols, and similar products in the allied chemical specialties field, including janitor supplies, equipment and accessories. The Buyer's Guide Section has been revised and brought up to date to include many new products in the field. This section is designed as a reference manual to which purchasers may turn for sources of materials and equipment bought, sold and used in the soap and sanitary chemical and allied industries.

Every attempt has been made to make the listings complete and accurate. If your firm is not listed and sells raw materials, machinery, bulk products, accessories, etc., to mem-

bers of these industries, please let us know so we may include your name in the listings in next year's edition. It should be borne in mind, however, that the BLUE BOOK is designed for those firms selling *to the trade* and is not intended for use by consumers of finished products.

The Reference Section of the BLUE BOOK also has been revised to include the latest data on federal specifications, perfuming and trade association specifications, and other pertinent data, including the newly revised Peet-Grady method for testing insecticides. Also given are the trade associations serving the field and an index to articles which have appeared in monthly issues of SOAP & SANITARY CHEMICALS for the past five years.

Your old edition of the BLUE BOOK should be discarded and this new 1952 edition substituted in its place.

THE PUBLISHERS

HONESTLY, IT'S THE BEST POLICY!

WE KNOW, because for over 43 years our ONLY POLICY has been to maintain QUALITY OF PRODUCT — Times and conditions may change, but Baird & McGuire have never altered their principle of compounding only the finest of products in the Industrial and Household Cleaner, Disinfectant and Insecticide field!

Coal-Tar Emulsifiable Disinfectants
Synthetic Pine Disinfectants
Pine Oil Disinfectants
Pine Type Disinfectants
New Odorless No-Roma
Mint-O-Phene
Cresol Compounds
Blue Label Bac-Trol
Red Label Bac-Trol

Pyrethrum Type Pes-Ton
Water Miscible DDT No. 25
Pyrethrum Concentrate No. 1
Vaporizing Insecticide
B-M Special Cleaner
S-D Cleaner
Wool Wash
Dish Washing Compound
Weed Killers

Motor Wash
Engine Cleaner
Creosote Oil
Closet Chemical
Red Mite Destroyer
Cresylic Acid
Tic-Tox
Insect Repellent
Flame Retardant

Cresylic Disinfectants
Odorless Cutting Oil Disinfectant
Crude Carbolic Acids
Larvicides—Fresh and Salt Water
Colloidal Disinfectants
Animal Dips
Wood Preserving Oils
Degreasers
Glycols

BAIRD & MCGUIRE, INC.

HOLBROOK, MASSACHUSETTS

Buyers' Guide Section

Listed on the following pages in alphabetical order are leading sources of supply for raw materials, equipment, and containers, and also bulk and private brand finished products and accessories bought by converters, repackers, and janitor supply and sanitary supply jobbers.

1952 BLUE BOOK Edition
of
SOAP & SANITARY CHEMICALS

THERE IS A "FREON" SAFE PROPELLENT TO MEET EVERY AEROSOL NEED

STANDARD PROPELLENTS

"FREON-12." For high-pressure aerosols such as insecticides. Also for surface-coating products such as metallic and pigmented paints and lacquers. Pressure—70 lbs./sq. in. gauge at 70°F.

"FREON-12" and **"Freon-11"** Solutions. Most widely used propellant. Can be tailored to individual pressure requirements from 1 lb. to 69 lbs./sq. in. gauge at 70°F., giving wide range in particle size.

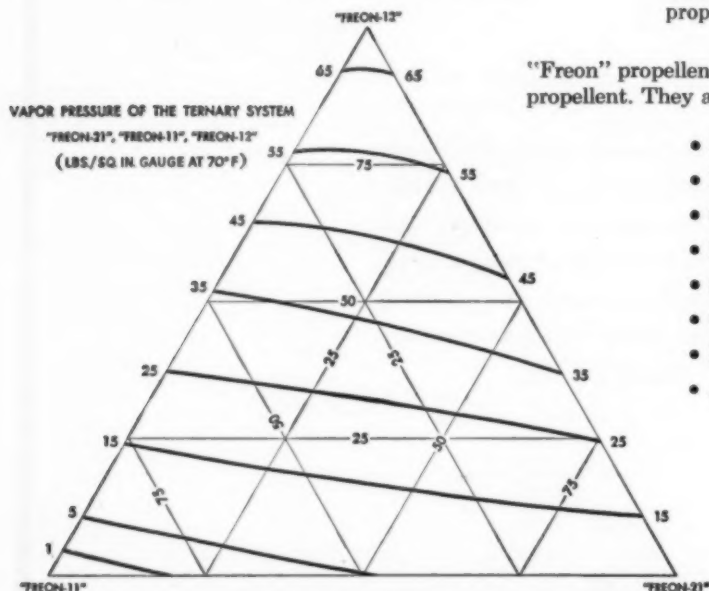
"FREON-12" and **"Freon-114"** Solutions. Where active ingredients require extreme stability... cosmetics, for example. Provide pressures from 12 to 69 lbs./sq. in. gauge at 70°F.

SPECIAL PROPELLENTS

"FREON-21," "FREON-11," "FREON-12" SOLUTIONS. Provide improved solvency properties over usual "Freon-11," "Freon-12" solutions. Suitable for wide variety of products.

"FREON-22," "FREON-11," "FREON-12" SOLUTIONS. For applications requiring special solvency properties not provided by usual "Freon-11," "Freon-12" solutions. "Freon-22" can also be used for pressure boosting. The pressure of "Freon-22" at 70°F. is approximately 120 lbs./sq. in. gauge.

"FREON-113." For oxygen-containing products where special solvency properties are needed. Can be used either alone or with other "Freon" propellents.

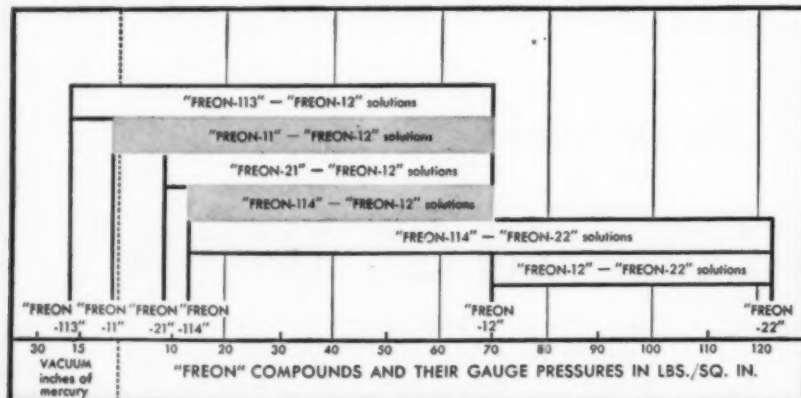


"Freon" propellents meet all the requirements of the ideal propellant. They are:

- Safe
- Nonflammable
- Of extremely low order toxicity
- Noncorrosive
- Stable
- Good solvents for ingredients
- Backed up with good technical service
- Available in pressures for every application

For specific information relating to these "Freon" propellents or for technical assistance in the development of your proposed aerosol, or pressure-packed product, write E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Wilmington 98, Delaware.

RANGE OF PRESSURES OBTAINABLE AT 70° F. WITH VARIOUS BINARY "FREON" PROPELLENT SOLUTIONS



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY



FREON
SAFE PROPELLENTS

"Freon" is Du Pont's registered trade-mark for its fluorinated hydrocarbon propellents

ABRASIVES AND FILLERS (Pumice, Silica, Feldspar, Bentonite, Clays, Marble Flour, etc.)

Agri-Indus Mfg. Co., Huntington Bank Bldg., Columbus, O.
 Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa.
 American Colloid Co., Merchandise Mart Plaza, Chicago
 American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
 Attapulugus Clay Co., 210 W. Washington Sq., Phila.
 California Industrial Minerals Co., Friant, Calif.
 Carolina Pyrophyllite Co., 10 E. 40th St., N. Y. 16
 Chas. B. Chrystal Co., 53 Park Pl., N. Y.
 Dicalite Div., 612 S. Flower St., Los Angeles, Cal.
 Filtrol Corp., 727 W. 7th St., Los Angeles, Calif.
 General Reduction Corp., 1820 Roscoe St., Chicago 13
 Hammill & Gillespie, 225 Broadway, N. Y. 7
 Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
 Heckathorn & Co., Richmond, Calif.
 Innis, Speiden & Co., 117 Liberty St., N. Y. 6
 Johns-Manville Corp., 22 E. 40th St., N. Y.
 Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
 National Sawdust Co., 69 N. 6th St., Bklyn.
 Natural Minerals Co., 108 W. 6th St., Los Angeles
 Pacific Coast Pumice Co., Bishop, Calif.
 Philadelphia Quartz Co., Public Ledger Bldg., Independence Sq., Phila. 6
 Pumice Corp. of America, Grants, N. M.
 Jas. H. Rhodes & Co., 157 W. Hubbard St., Chicago
 Wm. R. Rogers, 72 Park St., Beverly, Mass.
 F. E. Schundler & Co., Inc., 524 Railroad St., Joliet, Ill.
 Southeastern Clay Co., Aiken, S. C.
 Tamms Industries, Inc., 228 N. La Salle St., Chicago
 Universal Marble Products, Thornwood, N. Y.
 United Clay Mines Corp., 101 Oakland St., Trenton, N. J.
 R. T. Vanderbilt Co., 230 Park Ave., N. Y.
 Whittaker Clark & Daniels, 260 W. B'way, N. Y.
 Witco Chemical Co., 295 Madison Ave., N. Y.

ACCUMULATORS (Automatic Devices for performing bottle and can gathering operations.)

Ertel Engineering Corp., Kingston, N. Y.
 Island Equipment Corp., 27-01 Bridge Plaza N., LIC, N. Y.
 Karl Kiefer Machine Co., 919 Martin St., Cincinnati
 M. R. M. Co., 191 Berry St., Bklyn.
 Stokes & Smith Co., 4915 Summerdale Ave., Phila.
 U. S. Bottlers Machy Co., 4019 N. Rockwell St., Chicago

ACIDS (Sulfuric, Muriatric, Nitric, Acetic, Etc.)

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
 Atlas Powder Co., Wilmington, Del.
 J. T. Baker Chemical Co., Phillipsburg, N. J.
 Blockson Chem. Co., Joliet, Ill.
 Carbide & Carbon Chemicals Co., 30 E. 42nd St., N. Y.
 Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland
 Dow Chemical Co., Midland, Mich.
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
 Hercules Powder Co., Wilmington, Del.
 Heyden Chemical Corp., 393 7th Ave., N. Y. 1
 Hooker Electrochemical Co., Niagara Falls, N. Y. (Muriatric)
 Innis, Speiden & Co., 117 Liberty St., N. Y.
 Koppers Co., Koppers Bldg., Pittsburgh, Pa.
 A. R. Maas Chem. Co., 4570 Ardine St., So. Gate, Calif.
 Mallinckrodt Chemical Wks., St. Louis 7
 Mathieson Chem. Corp., Baltimore 3
 Merck & Co., Rahway, N. J.
 Michigan Chem. Corp., St. Louis, Mich.
 Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
 Niagara Alkali Co., 60 E. 42nd St., N. Y.
 Oronite Chem. Co., 38 Sansome St., San Francisco
 Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
 Publicker Industries, 1429 Walnut St., Phila. 2
 Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
 Rosenthal Berrow Co., 25 E. 26th St., N. Y.
 Rumford Co., Rumford 16, R. I.
 Stauffer Chem. Co., 420 Lexington Ave., N. Y.
 Tennessee Eastman Co., Kingsport, Tenn.

The Indians and Hudson Bay traders of the Northwest washed their blankets with a peculiar clay found in that region. They called it "soap clay" or "mineral jelly." There was truth in their discovery of its crude, practical efficiency! This colloidal clay is now known to be bentonite; we refine it into VOLCLAY for use in washing and cleaning compounds.



VOLCLAY is not just a "filler."
 It has actual detergent properties, which become very useful when combined with other ingredients.

VOLCLAY is produced in air-floated powders, some impalpably fine. Also as "KWK"—a pellet form that astonishingly disperses in water very quickly and yet yields the same colloidal gels as fine powder.

- Emulsifies oil, greasy soil and bitumens
- Absorbs and suspends soil particles
- Absorbs certain proteins, also carbon
- Mild. The pH is 9 to 9.5
- Slightly zeolitic—absorbs calcium, gives up sodium ions

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**AMERICAN COLLOID
 COMPANY**

MERCHANDISE MART PLAZA
 CHICAGO 54, ILLINOIS

YOU NAME IT—WE'LL SPRAY IT!



AN INTERESTING AND PROFITABLE ADDITION TO ANY SALES PROGRAM

Sales of pressure-packed products are steadily increasing. New uses and ideas are finding ready acceptance throughout the world.

Woodlets Incorporated are equipped to pressure-pack your formulae to your specifications. The Woodlet patented dispenser is chrome-plated, light, unobtrusive, and easy to use with the small pressure-packed refills.

AVAILABLE FROM STOCK

OZIUM the glycol-ized vapor-spray
OZEX the finger-tip insect killer
OZECLOR Ethyl Chloride U. S. P. for local anesthetic
OZOFF for the easy removal of adhesive tape
OZICOTE the protective lens cleaner contains silicone.

* OZIUM

A FAST SELLER

OZIUM, glycol-ized vapor-spray Set #1S-024 reduces air-borne bacteria and pleasingly reconditions the air.

* Reg. U.S. Pat. Off., Pat. Pend.



IN U.S.A. **WOODLETS INC.,** PORTLAND, PENNA.

• IN CANADA **G. H. WOOD & CO. LTD.,** TORONTO 14

ACIDS (Contd.)

Jos. Turner & Co., Ridgefield, N. J.
Victor Chemical Wks., 141 W. Jackson Blvd., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.

ACTIVATED CARBONS (see Bleaching Earths, Decolorizing Carbons)

ADHESIVES (Glues, Pastes, etc.)

Agri-Indus Mfg. Co., 17 S. High St., Columbus, O.
Arabol Mfg. Co., 110 E. 42nd St., N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Bakelite Corp., 30 E. 42nd St., N. Y.
Bingham Bros. Co., 406 Pearl St., N. Y. C.
Carbide & Carbon Chemicals, 30 E. 42nd St. N. Y.
Casein Co. of America, Bainbridge, N. Y.
Dennison Mfg. Co., Framingham, Mass.
Diamond Alkali Co., Cleveland 14, Ohio
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
B. F. Goodrich Chemical Co., Cleveland 15
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
National Adhesives Corp., 270 Madison Ave., N. Y.
National Starch Products, Inc., 270 Madison Ave., N. Y.
Philadelphia Quartz, Co., Public Ledger Bldg., Phila. 6
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Sanford Mfg. Co., W. Congress & Peoria St., Chicago
Satisfaction Supply Co., 508 W. Broadway, N. Y.
Shell Chem. Corp., 50 W. 50th St., N. Y. 20
A. E. Staley Mfg Co., Decatur, Ill.
Swift & Co., Chicago
Warwick Chemical Co., 10-10 44th Ave., L. I. C., N. Y.
T. F. Washburn Co., 2244 Elston Ave., Chicago 14

AEROSOL CONTAINERS

American Can Co., 100 Park Ave., N. Y. C.
Bridgeport Brass Co., Bridgeport, Conn.
Continental Can Co., 100 E. 42nd St., N. Y. 17
Crown Can Co., Erie Ave., Philadelphia 34

AEROSOL DISPERSANTS

General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y. 6
Kinetic Chemicals Div., E. I. du Pont de Nemours & Co.,
Wilmington

AEROSOL FILLING (for the Trade)

Aeropak, Inc., 3005 W. 47 St., Chicago
Aerosol Filling Div., Puritan Dist. Co., 160 Washington
St., N., Boston
G. Barr & Co., 3601 S. Racine Ave., Chicago
Bridgeport Brass Co., Bridgeport 2, Conn.
Chase Products Co., 1816 W. St. Charles Rd., Maywood,
Ill.
Connecticut Chem. Research Corp., Bridgeport 5, Conn.
Continental Filling Corp., 123 N. Hazel St., Danville, Ill.
Fluid Chem. Co., 860 Summer Ave., Newark, N. J.
Industrial Management Corp., 3350 San Fernando Rd.,
Los Angeles 65
Powr-Pak, Inc., 1148 Barnum Ave., Bridgeport, Conn.
Private Brands, Inc., 300 S. 3 St., Kansas City, Kans.
Regal Chem. Corp., 115 Dobbin St., Bklyn. 22
Ronor Corp., 1360 W. 9 St., Cleveland
Stalfort Pressure-Pak Corp., 319 W. Pratt St., Baltimore
Tru-Pine Co., 7638 Vincennes Ave., Chicago 20

AEROSOL PRODUCTS (Filled Containers for the Trade. Insecticides, Deodorants, Waxes, etc.)

Aeropak, Inc., 3005 W. 47 St., Chicago
Aerosol Filling Div., Puritan Dist. Co., 160 Washington
St. N. Boston
G. H. Barr & Co., 3601 S. Racine Ave., Chicago
Bridgeport Brass Co., Bridgeport 2, Conn.

SHOULD YOUR PRODUCT BE PACKAGED IN AN AEROSOL DISPENSER?

Aerosol packaged products are booming. New items and new ideas in aerosols are finding ready acceptance throughout the world. Perhaps your product should be in an aerosol dispenser. G. BARR & COMPANY has the finest equipment and laboratory experience for filling and testing aerosols in any size from 1 ounce to 12 ounces and in every type of container. Capacity of more than one million units a month insures prompt delivery. If your product has a potential in an aerosol dispenser, write to

G. BARR & COMPANY

Manufacturing Chemists

3601 So. Racine Ave.

Chicago 9, Ill.

**In Low Pressure
Aerosol Containers...
CONTINENTAL
gives you the
CHOICE**



IF YOU WANT TO USE YOUR OWN VALVE, Continental's Domed-Top Pressure can should be your choice. It's streamlined, has a quality appearance, is versatile — ideal for packaging a wide range of products from insecticides to paint.

IF YOU WANT A "CONTAINER-AND-VALVE," all in one, you have Continental's exclusive "Fingertip" dispenser in mind. The only container supplied by the can manufacturer with a built-in valve, it's tops for aerosol products like insecticides and household deodorants.

WHETHER you choose the "Fingertip" container or the Domed-Top Pressure can, you'll be glad you chose Continental. Not only is Continental one of the largest manufacturers of low pressure aerosol cans for non-food products, but also the only supplier of container and valve—and container alone. And here's a point to remember: Continental's sparkling lithography — on either can — gives your product more "Take-me-home" appeal.



CONTINENTAL CAN COMPANY

CONTINENTAL CAN BUILDING
100 East 42nd Street, New York 17, N. Y.

Eastern Division: 100 E. 42nd St., New York 17.
Central Division: 135 So. LaSalle St., Chicago 3.
Pacific Division: Russ Building, San Francisco 4.

AEROSOL PRODUCTS (Contd.)

Chase Products Co., 1816 W. St. Charles Rd., Maywood, Ill.
Connecticut Chem. Research Corp., Bridgeport 5, Conn.
Davies-Young Soap Co., Dayton, Ohio
Edco Corp., Elkton, Md.
Eston Chems. Inc., 3100 E. 26th St., Los Angeles
Fluid Chem. Co., 860 Summer Ave., Newark, N. J.
Fuld Bros., 710 S. Wolfe St., Balto.
General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., N. Y. 6
Regal Chemical Corp., 115 Dobbin St., Bklyn. 22
Sparklet Devices, Inc., 272 Badger Ave., Newark 8, N. J.
Tetco Co., 3350 San Fernando Rd., Los Angeles 65
Tru-Pine Co., 7638 Vincennes Ave., Chicago 20
Virginia Smelting Co., W. Norfolk, Va.
Uncle Sam Chem. Co., 575 W. 131 St., N. Y. 27
G. H. Wood & Co., Toronto, Can.
Woodlets, Inc., Portland, Pa.

AEROSOL VALVES

Bridgeport Brass Co., Bridgeport 2, Conn.
Continental Can Co., Inc., 100 E. 42nd St., N. Y. C.
Dill Manufacturing Co., 700 E. 82nd St., Cleveland, Ohio
Precision Valve Corp., 660 Saw Mill River Rd., Yonkers, N. Y.
Risdon Manufacturing Co., Naugatuck, Conn.
A Schrader's Son, Div. of Scovill Mfg. Co., 470 Vanderbilt Ave., Brooklyn
Valve Corp. of America, 1720 Fairfield Ave., Bridgeport, Conn.

AGITATORS (see Mixing Machinery)

AGRICULTURAL INSECTICIDES

Agicide Laboratories, 1717 Taylor Ave., Racine, Wis.
Aluminum Co. of America, 641 Gulf Bldg., Pittsburgh

American Agricultural Chem. Co., 50 Church St., N. Y.
American-British Chem. Supplies, 180 Madison Ave., N. Y. 16
American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Atlas Powder Co., Wilmington, Del.
California Spray-Chemical Corp., Richmond, Calif.
Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Corp. of Colorado, 1592 W. 12th Ave., Denver, Colo.
Chipman Chemical Co., Bound Brook, N. J.
Commercial Solvents Corp., 17 E. 42 St., N. Y. 17
Derris, Inc., 120 Wall St., N. Y.
Diamond Alkali Co., Cleveland 14
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eston Chems., Inc., 3100 E. 26th St., Los Angeles
Filtrol Corp., 727 W. 7th St., Los Angeles
Geigy Co., 89 Barclay St., N. Y.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Griffin Chem. Co., 1000 16th St., San Francisco
Heckathorn & Co., Richmond, Calif.
Hercules Powder Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Julius Hyman & Co., Denver, Colo.
Industrial Management Corp., 3350 San Fernando Rd., Los Angeles 65
Kay-Fries Chemicals, 180 Madison Ave., N. Y. 16
Koppers Co., Koppers Bldg., Pittsburgh
Lorenze Chemical Co., 135 N. 32nd Ave., Omaha
Mathieson Chem. Corp., Baltimore 3
McLaughlin Gormley King Co., 1715-5th St., S. E., Minneapolis
Michigan Chem. Corp., St. Louis, Mich.
Miller Products Co., 1932 S. W. Water Ave., Portland, Ore.
Monsanto Chem. Co., St. Louis 4
S. B. Penick & Co., 50 Church St., N. Y.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.

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POWCO BRAND basic insecticide materials and concentrates are available from specially equipped manufacturing plants across the continent.

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aldrin dieldrin

1951—*year of progress*

1952—*year of promise*

1951 was a year of achievements for Aldrin and Dieldrin. The dramatic airplane shipment of 15 tons of Aldrin from Denver to Iran for locust control, and the brilliant results gained, highlight a year that saw Aldrin and Dieldrin win unqualified acceptance as outstandingly economical and effective insecticides for control of grasshoppers and boll weevil and many other cotton pests. The progress of the past year holds promise for a wider field of usefulness for these proven chemicals in 1952.

GRASSHOPPERS — At the incredibly low dosage of two ounces to the acre Aldrin gave the "performance of the year" in grasshopper and locust control in the United States, Canada and the Middle East.

COTTON PESTS — Aldrin and Dieldrin were two of the most widely used and effective insect toxicants employed in the South to control boll weevil, thrips, cutworms and other cotton pests, thus helping attain the national goal of 16 million bales of cotton.

ANTS — Dieldrin has been recommended for the control of the Red Harvester Ant in Bulletin EC-18, BE&PQ, USDA.

Registration is being sought for the use of Aldrin and Dieldrin insecticides against a greater variety of insect pests. Some of these in control of which experimental field use of Aldrin and Dieldrin showed superior performance in 1951 are:

1. SOIL PESTS — This is almost a virgin field for the use of insecticides and promises a large market. Aldrin and Dieldrin in economical dosages have demonstrated their effectiveness in much needed control of many species of subterranean insects. Such control consistently has resulted in increased yields and improved quality of crops.

2. FLIES AND MOSQUITOES — Dieldrin has been extensively and successfully used experimentally for control of flies in barns, in cattle and hog feed lots and in community clean-up campaigns. In a recent authoritative article on the toxicity of several well-known organic insecticides to anopheline mosquito larvae Dieldrin is referred to as "The most toxic of all the compounds tested, both as an oil solution and as an emulsion."

Revolutionary new techniques for the application of Dieldrin for fly and mosquito control have been devised. Briefly these may be referred to as:

Janus, ancient Roman deity whose two faces symbolize past and future.



(a) **Strip Method for Fly Control** which consists of treating strips of wire screen with an insecticide. A report on this method says, "The strips treated with Dieldrin gave outstanding results, controlling flies throughout the fly season."

(b) **Dieldrin-Bentonite Granules** for controlling mosquitoes were used with amazing success in Arkansas rice fields. A bulletin describing this sure, low cost formulation reports, "Dieldrin was more toxic and retained its toxicity better when exposed to weathering in the field than the other insecticides tested."

3. PLUM CURCULIO — In experimental field work in controlling this series fruit pest both Aldrin and Dieldrin have been extremely effective.

It is possible here to give only a glimpse of some of the new markets projected for 1952. Wherever the war is being waged against harmful insects in the interest of greater production of food, feed and fibre crops and the public health, Aldrin and Dieldrin will be at the front.

Get the facts. Write for information and data concerning the use of these toxicants for your insecticide program for the new year.

TWO NEW INSECT TOXICANTS Compound 269* — Compound 711*

Experimental work on a wide scale with these new chemicals indicates their promise in control of a great number of agricultural pests.

* The designations "269" and "711" are presently to be replaced by common names chosen by the Interdepartmental Committee on Pest Control, BE&PQ.



Julius HYMAN & Company

DENVER, COLORADO

Shell Chemical Corporation—National Distributors of Unformulated Aldrin and Dieldrin, New York

AGRICULTURAL INSECTICIDES (Contd.)

Pittsburgh Agricultural Chem. Co., 350 Fifth Ave., N. Y. 1
 John Powell & Co., 1 Park Ave., N. Y. 1
 Prentiss Drug & Chem. Co., 110 William St., N. Y.
 Private Brands, Inc., 300 S. 3 St., Kansas City, Kans.
 J. W. Quinn Drug Co., Greenwood, Miss.
 Rohm & Haas Co., 222 W. Washington Sq., Phila.
 Shell Chemical Corp., 50 W. 50th St., N. Y. 20
 Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
 Standard Oil Co. (Calif.), 225 Bush St., San Francisco
 Stauffer Chem. Co., 420 Lexington Ave., N. Y.
 Thompson-Hayward Chem. Co., Kansas City, Mo.
 Tobacco By-Products & Chem. Corp., Richmond, Va.
 U. S. Industrial Chems., Inc., 60 E. 42nd St., N. Y.
 James Varley & Sons, 1200 Switzer Ave., St. Louis
 Velsicol Corp., 330 E. Grand Ave., Chicago
 Virginia-Carolina Chemical Corp., Richmond, Va.
 Westvaco Chem. Div., Food Mach. & Chem. Corp., 405 Lexington Ave., N. Y. 17
 Woburn Chemical Corp., Harrison, N. J.
 Wyandotte Chemicals Corp., Michigan Alkali Div., Wyandotte, Mich.

AGRICULTURAL INSECTICIDE SPREADERS

Alrose Chem. Co., Box 1294, Providence, R. I.
 Aluminum Ore. Co., Gulf Bldg., Pittsburgh
 American-British Chem. Supplies, 180 Madison Ave., N. Y. 16
 American Colloid Co., Merchandise Mart Plaza, Chicago
 American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
 Antara Chemicals, Div. of General Dyestuff Corp., 435 Hudson St., N. Y. 14
 Attapulugus Clay Co., 210 W. Washington Sq., Phila.
 Atlantic Refining Co., 260 South Broad St., Phila.
 Atlas Powder Co., Wilmington 99, Del.
 California Industrial Minerals Co., Friant, Calif.
 Carbide & Carbon Chemicals Co., 30 E. 42nd St., N. Y.
 Colloidal Products Corp., 2598 Taylor St., San Francisco
 Commercial Solvents Corp., 17 E. 42 St., N. Y. 17
 Crystal Soap & Chemical Co., 6300 State Rd., Phila.
 Derris, Inc., 120 Wall St., N. Y.
 Dicalite Div., 612 S. Flower St., Los Angeles, Calif.
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Eastern Magnesia Tale Co., Burlington, Vt.
 Emulsol Corp., 59 E. Madison St., Chicago
 Geigy Co., 89 Barclay St., New York
 General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y. 6
 Griffin Chem. Co., 1000 16th St., San Francisco
 Heckathorn & Co., Richmond, Calif.
 Hercules Powder Co., Wilmington, Dela.
 Kay-Fries Chemicals, Inc., 180 Madison Ave., N. Y.
 Kearny Mfg. Co., Kearny, N. J.
 Kessler Chem. Co., 7272 State Rd., Phila.
 Miller Products Co., 1932 S. W. Water Ave., Portland, Ore.
 Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
 Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
 National Aniline Div., 40 Rector St., N. Y.
 Nopco Chemical Co., Harrison, N. J.
 Onyx Oil & Chemical Co., 190 Warren St., Jersey City 2, N. J.
 Refined Prods. Corp., Lyndhurst, N. J.
 Rohm & Haas Co., 222 W. Washington Sq., Phila.
 F. E. Schundler & Co., 508 Railroad St., Joliet, Ill.
 Solvay Sales Division, Allied Chemical & Dye Corp., 40 Rector St., N. Y. 6
 R. T. Vanderbilt Co., 230 Park Ave., N. Y.

ALCOHOL (Ethyl and Denatured)

(see also Dealers)

Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
 Commercial Solvents Corp., 17 E. 42nd St., N. Y. 17
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
 Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
 Pennsylvania Sugar Co., 139 S. 3rd St., St. Louis
 Publicker Industries, Inc., 1429 Walnut St., Phila. 2

Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
 Shell Chem. Corp., 50 W. 50 St., N. Y. 20
 United Distillers of America, 350—5th Ave., N. Y. 1
 U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

ALCOHOL (Methyl or Wood) (see also Methanol)

(see also Dealers)

J. T. Baker Chem. Co., Phillipsburg, N. J.
 Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
 John H. Calo Co., 19 Rector St., N. Y. 6
 Cliffs-Dow Chemical Co., Marquette, Mich.
 E. W. Colledge, General Sales Agent, Inc., P. O. Box 389, Jacksonville, Fla.
 Commercial Solvents Corp., 17 E. 42nd St., N. Y. 17
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Innis, Speiden & Co., 117 Liberty St., N. Y.
 Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
 Merck & Co., Rahway, N. J.
 Mathieson Chemical Corp., Mathieson Bldg., Balto.
 Publicker Industries, Inc., 1429 Walnut St., Phila. 2
 Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
 Solvay Sales Div., Allied Chemical & Dye Corp., 40 Rector St., N. Y. 6
 U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.
 Wood Products Co., Buffalo, N. Y.

ALCOHOL, ISO-OCTYL

Enjay Co., Inc., 15 W. 51st St., N. Y. 19

ALCOHOL, ISO-PROPYL

Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Enjay Co., 15 W. 51st St., New York
 Merck & Co., Rahway, N. J.
 Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
 Shell Chemical Corp., 50 W. 50th St., N. Y. 20
 U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

ALDRIN

Julius Hyman & Co., Denver, Colo.
 Shell Chem Corp., 500 Fifth Ave., N. Y. C.

ALDRIN FORMULATIONS

Agricultural Chemicals, Inc., Greenville, Miss.
 Agricultural Processing Industries, Denver, Colo.
 Arizona Fertilizers, Inc., Phoenix, Arizona
 Atlas Chem. Corp., Waynesboro, Ga.
 California Spray-Chemical Corp., Richmond, Calif.
 Carolina Chemicals, Inc., West Columbia, S. C.
 Chapman Chem. Co., 707 Dermon Bldg., Memphis, Tenn.
 Chemical Corp. of Colorado, Denver, Colo.
 Chipman Chemical Co., Bound Brook, N. J.
 Coahoma Chemical, Inc., Beacon, N. Y.
 Crop-Saver Chemical Co., 3511 Potomac Ave., Chicago
 Flag Sulphur & Chemical Co., Tampa, Fla.
 Florida Agricultural Supply Co., P. O. 658, Jacksonville, Fla.
 Geigy Co., 89 Barclay St., N. Y.
 General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., N. Y.
 Naco Fertilizer Co., Charleston, S. C.
 Pittsburgh Agricultural Chem. Co., 350 5th Ave., N. Y.
 Plainsman Supply Co., Plainview, Texas
 Reasor-Hill Corp., Jacksonville, Ark.
 Shell Chemical Corp., 500 5th Ave., N. Y.
 Stauffer Chem. Co., 420 Lexington Ave., N. Y.
 Tobacco By-Products & Chem. Corp., 401 East Main St., Richmond, Va.
 Triangle Chemical Co., Macon, Ga.
 Tyner Petrus Co., W. Monroe, La.
 Woolfolk Chemical Wks., Fort Valley, Ga.

ALKALIES (see Caustic Soda, Soda Ash, Caustic Potash, etc.)

For the Manufacturer

AEROSOL

Pyrocide Aerosol Mixes Complete Mixes

Our tested recommended formulas, or formulas tailor-made to your specifications. You add propellant. Chilled and filtered to hold at -20° F. without precipitation. Special formulas to meet military and government specifications.

Partial Mixes

Require a minimum of processing. Contain pyrethrins, allethrin and synergists.

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Contains 20% pyrethrins, stabilized—guaranteed less than 1% propellant insolubles—dewaxed. A must in aerosols.

MGK Allethrin

Purest form of allethrin commercially available. Offered in several convenient concentrations.

FLY AND ROACH SPRAYS

"Pyrocide" Booster Concentrates

For low cost, Grade AA sprays. Combinations of pyrethrins, allethrin, or both, with synergists and other toxicants such as DDT, methoxychlor, lindane, etc. There are Booster Concentrates for specific purposes, such as industrial sprays, cattle sprays and mechanical aerosols.

"Pyrocide" 20

For odorless household sprays and non-poisonous sprays for food processing plants. Contains 2 grams pyrethrins per 100 cc. The original standardized pyrethrum extract. Deodorized and clarified. Dilutes brilliantly clear in any base oil.

MGK Allethrin Concentrates

Standardized at 90%, 20% and 2.5% allethrin content. A fine new insecticide toxicant. Fast knockdown. High kill.

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Dry "Pyrocide"

A dry concentrate for use in making non-poisonous dusts effective against many pests attacking food crops. Contains 2.2% pyrethrins. Highly recommended for late application on vegetables. No poisonous residue.

"P-M" Dust Concentrate

Combining fast action of pyrethrins plus high kill of DDT. Contains 1.2% pyrethrins, 10% DDT. When diluted up to 20 times with talc produces effective dust yet low toxic residue.

"Pyrocide" Emulsion Concentrate (Ever Green)

For repacking as garden spray. Leaves no poisonous residue.

Established in 1902, MGK Has Pioneered Insecticide Concentrates
Featuring Pyrethrins and Allethrin.

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Benzol Products Co., Newark, N. J.
Carbide & Carbon Chem., 30 E. 42nd St., N. Y. 17
McLaughlin, Gormley, King Co., 1715 S. E. 5th St.,
Minneapolis, Minn.
S. B. Penick & Co., 50 Church St., N. Y. 7
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
U. S. Industrial Chems. Inc., 60 E. 42 St., N. Y.

ALUMINUM CHIPS (for Drain Solvent)

Aluminum Co. of Amer., Gulf Bldg., Pittsburgh
Belmont Smelting & Ref. Co., 318 Belmont Ave.,
Bklyn., N. Y.
Reynold Metals Co., 19 Rector St., N. Y.

ALUMINUM STEARATE (see Stearates)

ALUMS

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Wks., 22 Mallinckrodt St.,
St. Louis 7
Merck & Co., Rahway, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

AMINOHYDROXY COMPOUNDS

Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Mallinckrodt Chemical Wks., St. Louis 7
Nopco Chem. Co., Harrison, N. J.

AMMONIA, HOUSEHOLD (see Household Ammonia)

AMMONIA WATER

(see also Dealers)

Barrett Div., Allied Chem. & Dye Corp., 40 Rector St.,
N. Y.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eastern Industries, Inc., Ridgefield, N. J.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Wks., St. Louis
Mathieson Chemical Corp., Baltimore 3
Merck & Co., Rahway, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Jos. Turner & Co., Ridgefield, N. J.

AMMONIUM CARBONATE

(see also Dealers)

American-British Chem. Supplies, Inc., 180 Madison
Ave., N. Y.
American Agricultural Chem. Co., 50 Church St., N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Wks., 2nd & Mallinckrodt Sts.,
St. Louis 7

Merck & Co., Rahway, N. J.
Riches-Nelson, Inc., 342 Madison Ave., N. Y. 17
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

AMMONIUM CHLORIDE

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
John H. Calo Co., 19 Rector St., N. Y. 6
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Wks., 2nd & Mallinckrodt Sts.,
St. Louis 7
Merck & Co., Rahway, N. J.
Chas. Parr & Co., 50 E. 42nd St., N. Y. 17
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y. 14

AMYL SALICYLATE (see Aromatic Chemicals)

ANISE OIL (see Essential Oils)

ANT POISONS

American Fluoride Corp., 151 W. 19th St., N. Y.
Ampion Corp., 4-88 47 Ave., Long Island City, N. Y.
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Buckeye Chem. & Spec. Co., 131 E. 23 St., N. Y. 10
California Spray-Chemical Corp., Richmond, Calif.
Chase Prods. Co., 1816 St. Charles Rd., Maywood, Ill.
Geo. H. Conn Co., Freeport, Ill.
Continental Car-Na-Var Corp., Brazil, Ind.
Foote Mineral Co., 1609 Summer St., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Geigy Co., Inc., 89 Barclay St., N. Y. 8
Heckathorn & Co., Richmond, Calif.
Hysan Products Co., 932 W. 38th Place, Chicago
Idico Prods. Co., 1 W. 125th St., N. Y.
Ketoid Chem. Co., 339 S. Van Deventer, St. Louis
O. E. Linck Co., 51 James St., Montclair, N. J.
Pfaltz & Bauer, Inc., Empire State Bldg., N. Y.
Private Brands, Inc., 300 S. 3 St., Kansas City, Kans.
J. W. Quinn Drug Co., Greenwood, Miss.
Science Industries, 605-15 Geyer Ave., St. Louis
Sennewald Drug Co., Inc., 2721 Chouteau Ave., St. Louis
Trio Chem. Wks., 341 Scholes St., Brooklyn
York Chemical Co., 23 Dean St., Brooklyn
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Spec. Corp., 1001 S. California Blvd.,
Chicago 12
W-B Chemical Co., Mt. Vernon, N. Y.

ANTI-OXIDANTS (for Soaps, Oils, Fats, etc.)

Alrose Chemical Co., P. O. Box 1294, Providence, R. I.
Archer-Daniels-Midland Co., Minneapolis 2
Benson Process Engineering Co., Eden, N. Y.
Bersworth Chemical Co., Framingham, Mass.
Carbide & Carbon Chems. Co., 30 E. 42nd St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Fine Organics, Inc., 211 E. 19th St., N. Y. 3
Fries Bros., 92 Reade St., N. Y. 13
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
B. F. Goodrich Chemical Co., Cleveland 15
Griffin Chem. Co., 1000 16th St., San Francisco
Heyden Chemical Corp., 393-7 Ave., N. Y. 1
Koppers Co., Pittsburgh 19
Mathieson Chemical Corp., Mathieson Bldg., Balto.
Merck & Co., Rahway, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis



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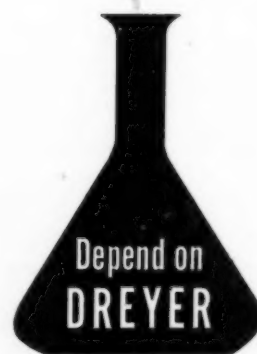
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Sharples Chemicals, Inc., 123 S. Broad St., Phila. 9
Shell Chem. Corp., 50 W. 50th St., N. Y. 20
Sindar Corp., 330 W. 42nd St., N. Y. 18
Tennessee Eastman Co., Kingsport, Tenn.
Van Dyk & Co., Belleville 9, N. J.

ANTISEPTIC DETERGENTS (See Detergents, Antiseptic Liquid)

ANTISEPTIC SOAP (See Soaps, Antiseptic)

ANTU CONCENTRATES

J. T. Baker Chem. Co., Phillipsburg, N. J.
Chase Prods. Co., 1816 St. Charles Rd., Maywood, Ill.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Fine Organics, Inc., 211 E. 19th St., N. Y. 3
Heckathorn & Co., Richmond, Calif.
S. B. Penick & Co., 50 Church St., N. Y. 7
Pittsburgh Agr. Chem. Co., 350 Fifth Ave., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.

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American Standard Mfg. Co., 2509 S. Greene St., Chicago
Chem. Service of Baltimore, Howard & West Sts., Balto.
Continental Car-Na-Var Corp., Brazil, Ind.
Dutro Co., 2155 Webster St., Alameda, Calif.
Empire Brushes, Port Chester, N. Y.
Franklin Research Co., 5134 Lancaster Ave., Phila. 31
Fuld Bros., 702 S. Wolfe St., Baltimore
H. Hertzberg & Son, Inc., 2300 Fifth Ave., N. Y.
Higley Chem. Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago
Hysan Products Co., 932 W. 38th Place, Chicago
S. C. Johnson & Son, 1155 Howe St., Racine, Wisc.
Laitner Brush Co., 2000 Brooklyn Ave., Detroit
Lowell Mfg. Co., 589 E. Illinois St., Chicago
Midland Laboratories, 210 Jones St., Dubuque, Iowa
E. B. Moore & Co., 613 N. Parkside Ave., Chicago
Palmer Fixture Co., Box 347, Waukesha, Wisc.
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Wyodak Chem. Co., 4600 E. 71st St., Cleveland

BLEACHING EQUIPMENT (for Oils), (see Deodorizing Equipment)

BLEACHING POWDER (Chloride of Lime)

Diversey Corp., 53 W. Jackson Blvd., Chicago
E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Chemical Corp., Baltimore 3
Monsanto Chemical Co., St. Louis 4
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rosenthal Berrow Co., 25 E. 26th St., N. Y. 10
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

BLENDERS (See Mixing Machinery)

BLOCK HOLDERS (see Holders, Deodorizing Block)

BLOWERS, ELECTRIC (see Sprayers, Electric)

BLUING (see Laundry Blue)

BOILER COMPOUNDS

American Colloid Co., Merchandise Mart Plaza, Chicago
Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Baum's Castorine Co., Rome, N. Y.
Bilco Chemical Co., 607 DeGraw St., Bklyn.
Brileo Laboratories, 1553 63rd St., Brooklyn 19
Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Chem. Service Co. of Baltimore, Baltimore 30

BOILER COMPOUNDS (Contd.)

Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clarkson Laboratories, 919 N. 9th St., Phila.
Eagle Soap Corp., Huntington, Ind.
Essential Chems. Co., 3200 N. 32nd St., Milwaukee 8
Fuld Bros., 702 S. Wolfe St., Baltimore
Goulard & Olena, Inc., Skillman, N. J.
Haag Laboratories, Blue Island, Ill.
Hawk-Eye Compound Co., Blue Island, Ill.
Hercules Chem. Co., 332 Canal St., N. Y.
Higley Chem. Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hysant Prods. Co., 932 W. 38th Place, Chicago
Industrial Materials Co., 1017 McCall St., Houston, Tex.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Midland Labs., Dubuque, Iowa
Peck's Products Co., 610 E. Clarence Ave., St. Louis 15
Permutit Co., 330 W. 42nd St., N. Y.
Theo. B. Robertson Prods. Co., 700 Division St., Chicago
Solshine Mfg. Co., 423 Second St., Fall River, Mass.
Sugar Beet Prod. Co., Saginaw, Mich.
Trio Chem. Wks., 341 Scholes St., Brooklyn
Ultra Chem. Wks., P. O. Box 1536, Paterson, N. J.
U. S. Sanitary Specialties Corp., 1001 S. California Blvd., Chicago 12
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div., Wyandotte, Mich.

BOIS de ROSE OIL (see Essential Oils)

BORAX (and Boric Acid)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
American Potash & Chem. Corp., 122 E. 42nd St., N. Y. 17
Columbia-Southern Chem. Corp., 5th Ave. & Bellefield, Pittsburgh
Croton Chem. Corp., 114 Liberty St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.

General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chem. Wks., St. Louis 7
Pacific Coast Borax Co., 100 Park Ave., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
Witco Chemical Co., 295 Madison Ave., N. J.

BORIC ACID (see Above)

BOTTLES AND JARS

Armstrong Cork Co., Lancaster, Pa.
Anchor Hocking Glass Corp., Lancaster, Ohio
Brockway Glass Co., Brockway, Pa.
Carr-Lowrey Glass Co., P. O. Box 356, Baltimore 8
Foster-Forbes Glass Co., Marion, Ind.
Graham Glass Co., Evansville, Ind.
Hagerty Bros. & Co., 10 Platt St., N. Y.
Hazel Atlas Glass Co., Wheeling, W. Va.
Maryland Glass Corp., Baltimore, Md.
Owens Illinois Glass Co., Toledo, O.
F. E. Reed Glass Co., 860 Maple St., Rochester, N. Y.
Root Glass Co., Terre Haute, Ind.
Ruth Glass Co., Conshohocken, Pa.
Tygart Valley Glass Co., Washington, Pa.

BOTTLES, PLASTIC (Rigid and Squeezeable)

Calumet Mfg. Co., 565 - 5th Ave., N. Y. 17
Elmer E. Mills Corp., 2930 N. Ashland Ave., Chicago 13
Injection Molding Co., 3823 Independence Ave., Kansas City, Mo.
Plax Corp., P. O. Box 1019, Hartford 1, Conn.

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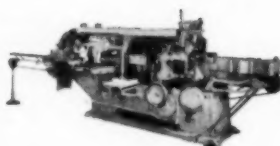
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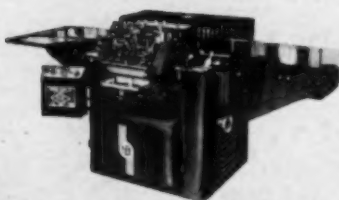


TIGHTWRAPPING MACHINE



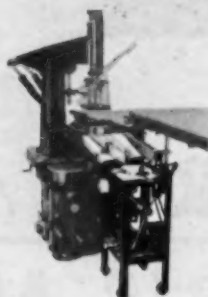
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Carton Filling and
Sealing Machine

LABELLING MACHINES



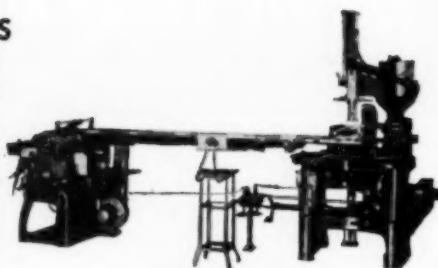
BANKS LABELLER
for vials and bottles

SET UP PAPER BOX MACHINES

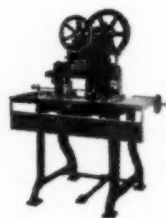


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Filpaco Industries, 2464 S. Michigan Ave., Chicago
Island Equipment Corp., 27-01 Bridge Plaza N., LIC, N. Y.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35 St., Chicago (Used)
Perl Mach. Mfg. Co., 68 Jay St., Bklyn.
Pneumatic Scale Corp., N. Quincy, Mass.
Standard-Knapp Div. of Emhart Mfg. Co., Portland, Conn.
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
U. S. Bottlers Mchy. Co., 4019 N. Rockwell St., Chicago

BOTTLE WASHERS (see Washing Machinery, Bottle)

BOX LINERS (see Bag Liners)

BOXES (Corrugated and/or Fibre)

Brooklyn Fibre Syndicate, Decatur St. & Irving Ave., Brooklyn
Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
Consolidated Paper Co., Monroe, Mich.
Container Corp. of America, 111 W. Washington St., Chicago
Federal Fibre Corp., 3704 10th St., L. I. C. 1
Robert Gair Co., 155 E. 44th St., N. Y.
Gardner Board & Carton Co., Middletown, O.
Hinde & Dauch Paper Co., 222 Decatur St., Sandusky, O.
F. J. Kress Box Co., 2390 Liberty Ave., Pittsburgh
Owens-Illinois Glass Co., Toledo, O.
W. C. Ritchie & Co., 8880 Baltimore Ave., Chicago
Universal Folding Box Co., Monroe & 13th Sts., Hoboken, N. J.

BOXES (Fancy Paper)

Alderman-Fairchild Co., 367 Orchard St., Rochester, N. Y.
F. N. Burt Co., Ltd., 540 Seneca St., Buffalo, N. Y.
C. J. Fox Co., 236 Aborn St., Providence, R. I.
Foxon Paper Co., 230 West Park St., Providence, R. I.
Robert Gair Co., 155 E. 44th St., N. Y.
Gardner Board & Carton Co., Middletown, O.
R. R. Heywood, Inc., 26th St. & 9th Ave., N. Y.
R. J. Kittredge Co., 812 W. Superior St., Chicago
Pictorial Package Co., Aurora, Ill.
Piqua Paper Box Co., Piqua, O.
Potomac Lithograph Mfg. Co., Washington, D. C.
W. C. Ritchie & Co., 8880 Baltimore Ave., Chicago
Robert Paper Box Co., Montville, Conn.
Geo. Schmitt & Co., Grand & Florence Sts., Brooklyn
Strobridge Lithographing Co., Norwood Station, Cincinnati
U. S. Printing & Lithographing Co., Norwood, Cincinnati
Universal Folding Box Co., Monroe & 13th St., Hoboken, N. J.
Carl Voss Corp., Hoboken, N. J.

BOXES (Fancy Wooden)

American Crayon Co., Sandusky, O.
National Box & Lumber Co., Newark 5, N. J.
Pilliod Cabinet Co., Swanton, O.

BROKERS (Chemicals)

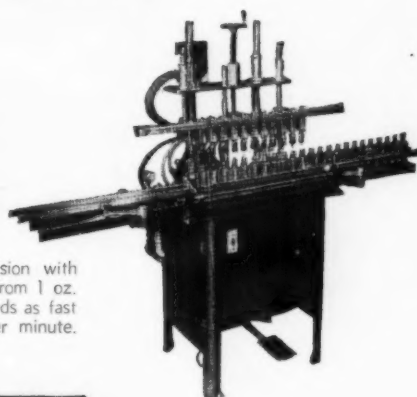
American-British Chemical Supplies, 180 Madison Ave., N. Y. 16
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
John H. Calo Co., 19 Rector St., N. Y. 6
John A. Chew, Inc., 60 E. 42nd St., N. Y.
Simon Cytron Trading Co., 50 Broad St., N. Y.
Dickerson Co., Drexel Bldg., Phila.
Elgo Trading Corp., 220 Broadway, N. Y. 7
Griffin Chem. Co., 1000 16th St., San Francisco
Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
Heckathorn & Co., Richmond, Calif.
Arnold Hoffman Co., Providence, R. I.
Chas. L. Huisking & Co., 155 Varick St., N. Y.
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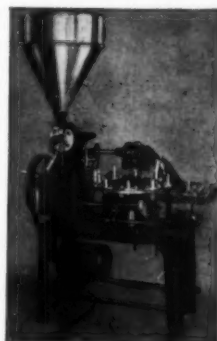
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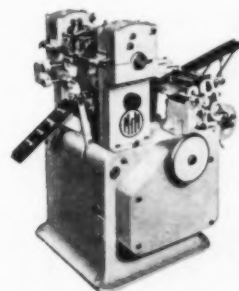
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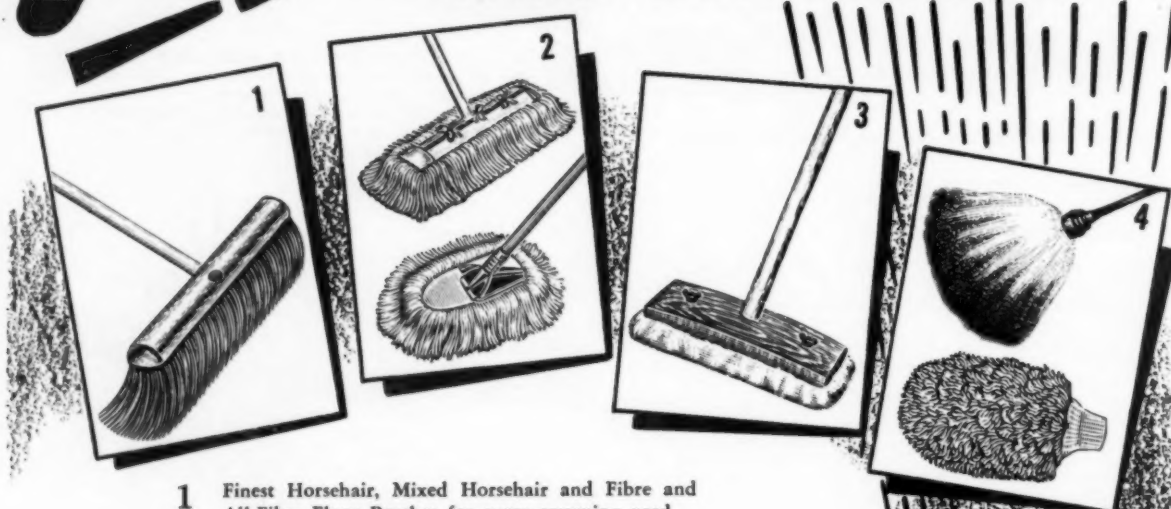
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Rosenthal Bercow Co., 25 E. 26th St., N. Y.
 Schmitz-Schoenewald-Turner Co., 20 Vesey St., N. Y. 7
 George Uhe, Inc., 80 Eighth Ave., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y. 14
 G. A. Wharry & Co., 95 Broad St., N. Y. 4

BROKERS (Oils and Fats)

Irving R. Boody Co., 120 Wall St., N. Y.
John H. Calo Co., 19 Rector St., N. Y. 6
 Simon Cytron Trading Co., 50 Broad St., N. Y.
 Davidson Commission Co., 327 S. La Salle St., Chicago
 John W. Hall, 327 S. La Salle St., Chicago
 Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
 Hasselman, Seaman, de Ryss, Inc., 347 Madison Ave., N. Y.
 Hentz & Co., 60 Beaver St., N. Y.
 Arnold Hoffman Co., Providence, R. I.
 Chas. Hollingshead Co., Produce Exchange, N. Y.
 Horner Commission Co., 15 William St., N. Y.
 E. G. James Co., 316 S. La Salle St., Chicago
 Kullman & Co., 339 Produce Exchange, N. Y.
 Marwood Co., 221 N. LaSalle, Chicago
 Miller & Co., 2401 Chestnut St., Philadelphia
 Rayner & Stonington, Inc., 79 Wall St., N. Y.
 Rivo Mfrs. & Distributors Co., 66-09 111 St., Forest Hills, N. Y.
 Roesling, Monroe & Co., 133 Front St., N. Y.
Rosenthal Bercow Co. 25 E. 26th St., N. Y.
 Sterne & Son Co., Board of Trade Bldg., Chicago
 Weaver & Hugl, Inc., Produce Exchange Bldg., N. Y.
Welch, Holme & Clark Co., Inc., 439 West St. N. Y. 14
 G. A. Wharry & Co., 95 Broad St., N. Y.
 Wilbur-Ellis Co., 17 Battery Pl., N. Y.
 Wilson Brokerage, Inc., Produce Exchange, N. Y.

BROOMS

Alabama Broom & Mattress Co., Huntsville, Ala.
 Amsterdam Broom Co., 81-95 Brookside Ave., Amsterdam, N. Y.
 Brooklyn Fibre Broom Co., 47 Dinsmore Pl., Brooklyn 8
 Detroit Quality Brush Mfg. Co., 5937 Michigan Ave., Detroit
 Eagle Woodenware Co., Hamilton, O.
 Flour City Brush Co., 1501—4th Ave., S. Minneapolis
 Kendallville Brush & Broom Co., Kendallville, Ind.
 Laitner Brush Co., 2000 Brooklyn Ave., Detroit
 Ox Fibre Brush Co., Frederick, Md.
 Tate Mfg. Co., 67 Sudbury St., Boston, Mass.
 M. J. Toohey & Co., Fall River, Mass.

BRUSHES

American Standard Mfg. Co., 2509 S. Green St., Chicago
 Amsterdam Broom Co., 81-95 Brookside Ave., Amsterdam, N. Y.
 Detroit Quality Brush Mfg. Co., 5937 Michigan Ave., Detroit
 Empire Brushes, Inc., Port Chester, N. Y.
 Jos. O. Flatt & Co., 141 Cedar St., Reading, Pa.
 Flour City Brush Co., 1501—4th Ave., S., Minneapolis
 J. I. Holcomb Co., Indianapolis
 Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
 W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
 Kendallville Brush & Broom Co., Kendallville, Ind.
 Laitner Brush Co., 2000 Brooklyn Ave., Detroit
 National Brush Co., Aurora, Ill.
 Ox Fibre Brush Co., Frederick, Md.
 Pacific Coast Brush Co., Los Angeles
 Pioneer Mfg. Co., Cleveland, O.
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Rapeseed Oil
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 Resin, Dispersions and Emulsions
 Resins, Coumarone-Indene
 Resins, Pentaerythitol
 Rosin, Gum and Wood
 Rosin, Derivatives
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Rosenthal Berrow, 25 E. 26th St., N. Y. 10
U. S. Industrial Chems., Inc., 60 E. 42nd St., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div., Wyandotte, Mich.

CALCIUM STEARATE (see Stearates)

CAMPHOR OIL (see Essential Oils)

CAN FILLING MACHINERY (see Filling Machinery, Cans)

CANDELILLA WAX (see Waxes)

CAN SPOUTS AND NOZZLES

Continental Can Co., 100 E. 42 St., N. Y. 17
Crown Cork & Seal Co., Baltimore, Md.
Eastern Can Co., Keap St. & Kent Ave., Bklyn.
George D. Ellis & Son, 309 N. 3rd St., Philadelphia
Rieke Metal Products Corp., 70 Pine St., N. Y.
Seal Spout Corp., 363 Jelliff Ave., Newark 8, N. J.
(for cartons)
Standard Containers, Inc., Montclair, N. J.
Z & W Machine Prods., Inc., 5151 St. Clair Ave., Cleveland

CANS (Fibre or Paper)

American Can Co., 100 Park Ave., N. Y.
Cambridge Box Co., 196 Broadway, Cambridge, Mass.
Canister Co., Phillipsburg, N. J.
Cin-Made Corp., 294 Eggleston Ave., Cincinnati
Cleveland Container Co., 6201 Barberton Ave., Cleveland
Columbia Can Co., 59-27 54th St., Maspeth 78, N. Y.
Continental Can Co., 100 E. 42nd St., N. Y.
Cross Paper Products Co., 2595 Third Ave., N. Y.
Federal Fibre Corp., 3704 10th St., L. I. C. 1
Fonda Container Co., 41 Park Row, N. Y.
Harcord Mfg. Co., 150 Bay St., Jersey City 2, N. J.
Master Package Corp., Owen, Wis.
Midwest Paper Container Co., 707 N. 3rd St., Minneapolis
National Paper Can Co., Cudahy, Wis.
Packard Container Corp., West New York, N. J.
R. C. Can Co., 121 Chambers St., St. Louis
W. C. Ritchie & Co., 8880 Baltimore Ave., Chicago
Sealright Co., 500 Fifth Ave., N. Y.
Sutherland Paper Co., Kalamazoo, Mich.

CANS (Sifter Top)

American Can Co., 230 Park Ave., N. Y.
Anchor Hocking Glass Corp., Lancaster, Ohio
Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
Canister Co., Phillipsburg, N. J.
Cans, Inc., 3217 W. 47th Pl., Chicago
Cleveland Container Co., 6201 Barberton Ave., Cleveland
Cin-Made Corp., 294 Eggleston Ave., Cincinnati
Continental Can Co., Inc., 100 E. 42nd St., N. Y.
Crown Can Co., Erie Ave. & H St., Phila.
Eastern Can Co., Keap St. & Kent Ave., Bklyn.
Harcord Mfg. Co., 150 Bay St., Jersey City 2, N. J.
National Can Co., 110 E. 42nd St., N. Y.
Packard Container Corp., 5811 Park Ave., West New York, N. J.
R. C. Can Co., 121 Chambers St., St. Louis

W. C. Ritchie & Co., 8880 Baltimore Ave., Chicago
Sefton Fibre Can Co., 3275 Big Bend Blvd., St. Louis
Standard Container, Inc., Bloomfield, N. J.
Sutherland Paper Co., Kalamazoo, Mich.

CANS (Tin)

American Can Co., 100 Park Ave., N. Y.
Anchor Hocking Glass Corp., Lancaster, Ohio
Central Can Co., 2415 W. 9th St., Chicago
Cans, Inc., 3217 W. 47th Pl., Chicago
J. L. Clark Mfg. Co., Rockford, Ill.
Columbia Can Co., 59-27 54th St., Maspeth 78, N. Y.
Continental Can Co., Inc., 100 E. 42nd St., N. Y.
Crown Can Co., Erie Ave. & H St., Philadelphia
Eastern Can Co., Wythe Ave. & Keap St., Brooklyn 11
George D. Ellis & Sons, 309 N. 3rd St., Philadelphia
Fein's Tin Can Co., Bush Terminal, Brooklyn
General Can Co., 1603 S. Canal St., Chicago
Heekin Can Co., Cincinnati
National Can Co., 110 E. 42nd St., N. Y.
W. F. Robertson Steel & Iron Co., Springfield, O.
St. Louis Can Co., 904 S. 14th St., St. Louis
Standard Container, Inc., Bloomfield, N. J.
Vulcan Tin Can Co., Bellwood, Ill.

CAPPING MACHINERY

Alsop Engineering Corp., 100 High St., Milldale, Conn.
Anchor Hocking Glass Corp., Lancaster, Ohio
Consolidated Packaging Machinery Corp., 1400 West Ave., Buffalo
Consolidated Prods Co., 15 Park Row, N. Y. 38, (Used)
Crown Cork & Seal Co., Baltimore, Md.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati, Ohio
M. R. M. Co., 191 Berry St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Pneumatic Scale Corp., North Quincy, Mass.
Resina Automatic Mchy. Co., 572 Smith St., Brooklyn
Scientific Filter Co., 59 Rose St., N. Y. 10
Triangle Package Machy. Co., 6633 W. Diversey Blvd., Chicago 51
Tite-Cap Machine Co., 57 Rose St., N. Y. 7
U. S. Bottlers Mchy. Co., 4015 N. Rockwell St., Chicago

CAPS (Molded)

Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
General Plastics, Inc., N. Tonawanda, N. Y.
Owens-Illinois Glass Co., Toledo, Ohio
Plaskon Division, Libby-Owens-Ford Glass Co., 2112 Sylvan Ave., Toledo 6, Ohio
Resinox Corp., Terre Haute, Ind.
Standard Cap & Molding Co., 307 S. Eaton St., Baltimore
Toledo Synthetic Prods. Co., Toledo, Ohio

CAPS (Metal)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
Cans, Inc., 3217 W. 47th Pl., Chicago
Cin-Made Corp., 295 Eggleston Ave., Cincinnati
Closure Service Co., Toledo, Ohio
Continental Can Co., 100 E. 42nd St., N. Y.
Crown Cork & Seal Co., Eastern Ave. & Kresson St., Baltimore
George D. Ellis Sons, 309 N. 3rd St., Philadelphia
National Can Co., 110 E. 42nd St., N. Y.
National Seal Co., 14th Ave. & 37th St., Brooklyn
Owens-Illinois Glass Co., Toledo, Ohio
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago

CARBOLIC ACID (see Phenol)

CARBONS for bleaching oils, glycerine, etc. (see Decolorizing Carbons)

CARBON TETRACHLORIDE

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Center, N. Y.
J. T. Baker Chemical Co., Phillipsburg, N. J.
Carbide & Carbon Chemicals, 30 E. 42 St., N. Y. 17
Diamond Alkali Co., 300 Union Commerce Bldg.,
Cleveland 14
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Niagara Smelting Corp., Niagara Falls, N. Y.
Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Virginia-Carolina Chem. Corp., Richmond, Va.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chem. Div., Food Mach. & Chem. Corp.,
405 Lexington Ave., N. Y.

CARBOXYMETHYCELLULOSE (CMC)

Antara Chemicals, Div. of General Dyestuff Corp., 435
Hudson St., N. Y. 14
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Hercules Powder Co., 929 King St., Wilmington, Del.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
Wyandotte, Mich.

CARNAUBA WAX (see Waxes)

CARTON HANDLING SYSTEMS

J. L. Ferguson Co., Joliet, Ill.
Hornney & Co., 420 Lexington Ave., N. Y.
Island Equipment Corp., 27-01 Bridge Plaza N., LIC, N.Y.
Pneumatic Scale Corp., Quincy, Mass.
Self-Lifting Piano Truck Co., Findlay, Ohio
Stephans-Adamson Mfg. Co., Aurora, Ill.
Weigh Right Automatic Scale Co., Joliet, Ill.

CARTON LINING MACHINES (see Lining Machinery)

CARTON SEALING MACHINERY (see Sealing Machinery)

CARTONING MACHINERY

Chisholm-Ryder Co. of Pa., Hanover, Pa.
Consolidated Prods. Co., 15 Park Row, N. Y. 38, (Used)
J. L. Ferguson Co., Joliet, Ill.
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornney & Co., 420 Lexington Ave., N. Y.
Johnson Automatic Sealer Co., Battle Creek, Mich.
R. A. Jones & Co., Cincinnati, Ohio
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago (Used)
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Standard-Knapp Div. of Emhart Mfg. Co., Portland,
Conn.
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
Triangle Package Machinery Co., 6633 W. Diversey
Blvd., Chicago 51
Weigh Right Automatic Scale Co., Joliet, Ill.

CARTONS (Display and Knock Down)

Alderman-Fairchild Co., Rochester, N. Y.
Consolidated Paper Co., Monroe, Mich.
Robert Gair Co., 155 E. 44th St., N. Y.
Gardner Board & Carton Co., Middletown, Ohio
Nevins-Church Co., 250 Park Ave., N. Y.
New England Card & Paper Co., Springfield, Mass.
Owens-Illinois Glass Co., Toledo, O.
Pictorial Package Co., Aurora, Ill.
Randolph Box & Label Co., 843 W. VanBuren St., Chicago
W. C. Ritchie & Co., 8880 Baltimore Ave., Chicago
Robertson Paper Box Co., Inc., Montville, Conn.
George Schmitt & Co., Grand & Florence Sts., Brooklyn
Sutherland Paper Co., Kalamazoo, Mich.
U. S. Printing & Lithographing Co., Cincinnati, Ohio
Universal Folding Box Co., Monroe & 13th St.,
Hoboken, N. J.

CASE LOADING MACHINERY

Chisholm-Ryder Co., Hanover, Penna.
J. L. Ferguson Co., Joliet, Ill.

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CRESOL COMPOUND
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CASE LOADING MACHINERY (Contd.)

Johnson Automatic Scale Co., Battle Creek, Mich.
 R. A. Jones & Co., Cincinnati
 Hornney & Co., 420 Lexington Ave., N. Y.
 Karl Kiefer Mach. Co., 919 Martin St., Cincinnati
 Newman Tallow & Soap Machy. Co., 1051 W. 35 St.,
 Chicago (Used)
 Pneumatic Scale Corp., N. Quincy, Mass.
 Standard-Knapp Div. of Emhart Mfg. Co., Portland,
 Conn.
 Stokes & Smith Co., 4915 Summerdale Ave., Phila.

CASE SEALING MACHINERY (see Sealing Machinery)

CASEIN

American-British Chem. Supplies, Inc., 180 Madison
 Ave., N. Y.
 American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
 Borden Co., 350 Madison Ave., N. Y.
 Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Enco Chem. Corp., 441 Lexington Ave., N. Y.
 Hercules Powder Co., 929 King St., Wilmington, Del.
 Innis, Speiden & Co., 117 Liberty St., N. Y.
 Land-o-Lakes Creameries, Minneapolis
 National Casein Co., 603 W. 80th St., Chicago
 Welch, Holme & Clark Co., 439 West St., N. Y.

CASES (Fibre) (see Boxes, Cans)

CASES (Corrugated) (see Boxes)

CASSIA OIL (see Essential Oils)

CASTILE SOAP, BAR

Armour & Co., 1355 W. 31st St., Chicago
 Conti Products Corp., 43 Clinton Ave., Brooklyn
 Davies-Young Soap Co., Dayton 1, O.
 Haskins Bros. & Co., Omaha
 Hewitt Soap Co., Dayton, O.
 Kranich Soap Co., 54 Richards St., Brooklyn
 Lockwood-Brackett Co., Waltham Station, Boston
 Newell Guttradt Co., 350 Fremont St., San Francisco
 Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
 Procter & Gamble Co., Ivorydale, O.
 Sanitary Soap Co., 104 Railroad Ave., Paterson
 Schmidt Soap Products, 236 W. North Ave., Chicago
 Solshine Mfg. Co., 412 2nd St., Fall River, Mass.
 John T. Stanley Co., 642 W. 30th St., N. Y.
 Superior Soap Corp., 121 Nostrand Ave., Brooklyn
 Swift & Co., Chicago
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

CASTILE SOAP, LIQUID

Ampion Corp., 47-02 5th St., Long Island City, N. Y.
 Antiseptol Co., 5524 Northwest Highway, Chicago
 Armour & Co., 1355 W. 31st St., Chicago 9
 Baums Castorine Co., 200 Matthew St., Rome, N. Y.
 Bilco Chemical Co., 607 DeGraw St., Bklyn.
 Chem. Mfg. & Dist. Co., Easton, Pa.
 Chemical Service Co. of Baltimore, Howard & West Sts.,
 Baltimore 30
 Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
 Clifton Chemical Co., 62 William St., N. Y.
 Copeland Laboratories, 774 College St., Toronto, Can.
 Davies-Young Soap Co., Dayton, O.
 Eagle Soap Corp., Huntington, Ind.
 Essential Chemicals Co., 2200 N. 32 St., Milwaukee 8
 Fuld Bros., 702 S. Wolfe St., Baltimore
 James Good, Inc., Kensington, Philadelphia
 Haag Laboratories, Inc., 140th & Seeley Ave., Blue
 Island, Ill.
 Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
 Hewitt Soap Co., Dayton, O.
 Higley Chem. Co., Dubuque, Iowa
 R. M. Hollingshead Corp., Camden, N. J.
 Hunt Mfg. Co., Lisbon Rd., Cleveland
 Hysan Prods. Co., 932 W. 38th Place, Chicago
 Kranich Soap Co., 54 Richards St., Brooklyn
 Midland Laboratories, 210 Jones St., Dubuque, Iowa

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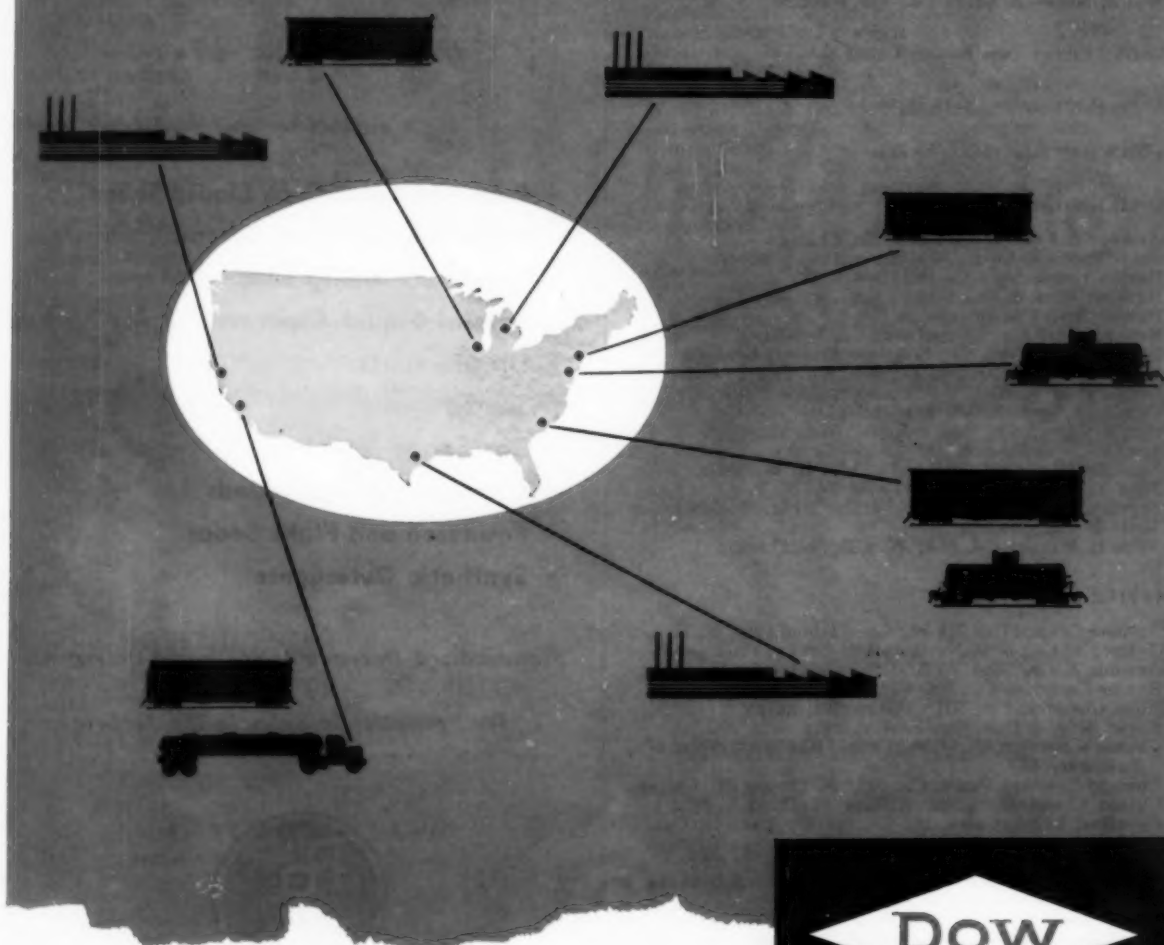
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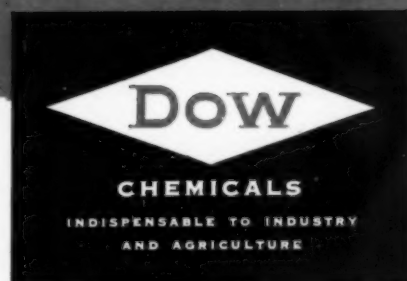
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Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schmidt Soap Products, 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago 9
Tech. Soap Mfg. Co., 7310 S. Chicago Ave., Chicago
Trio Chem. Wks., 341 Scholes St., Brooklyn
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Science Industries, 609-15 Geyer Ave., St. Louis
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
U. S. Sanitary Spec. Corp., 1001 S. California Blvd., Chicago 12
Uncle Sam Chem. Co., 575 W. 131st St., N. Y.
G. H. Weed & Co., 575 W. 131st St., N. Y.
Woodlets, Inc., Portland, Pa.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

CASTOR OIL

(see also Dealers)

Archer-Daniels-Midland Co., Minneapolis
Baker Castor Oil Co., 120 Broadway, N. Y.
Balfour, Guthrie & Co., 67 Wall St., N. Y.
John H. Calo Co., 19 Rector St., N. Y. 6
T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Falk & Co., Pittsburgh 30
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Hasselman, Seaman, de Ryss, Inc., 347 Madison Ave., N. Y. 17
Spencer Kellogg & Sons, Buffalo, N. Y.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
J. H. Redding, Inc., 177 Battery Place, N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Swift & Co., Chicago
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
G. A. Wharry & Co., 95 Broad St., N. Y. 4

CATALYSTS

Aluminum Co. of America, Gulf Bldg., Pittsburgh
Attapulugus Clay Co., 210 W. Washington Sq., Phila.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Filtrol Corp., 727 W. 7th St., Los Angeles 17
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Harshaw Chem. Co., 1945 E. 97th St., Cleveland 6
Hooker Electrochemical Co., Niagara Falls, N. Y.
Johns-Manville Corp., 22 E. 40th St., N. Y.
Koppers Co., Pittsburgh 19
Michigan Chemical Corp., St. Louis, Mich.
Monsanto Chemical Co., St. Louis 4
Oronite Chem. Co., 38 Sansome St., San Francisco
Shell Chem. Corp., 50 W. 50th St., N. Y. 20
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

CATTLE DIPS AND SPRAYS

(see also Sheep Dips)

Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Baird & McGuire, Inc., Holbrook, Mass.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Bilco Chemical Co., 607 DeGraw St., Bklyn.
California Spray-Chemical Corp., Richmond, Calif.
Carbide & Carbon Chemicals, 30 E. 42 St., N. Y. 17
Cary Mfg. Co., 4949 Mansfield St., San Diego 16, Calif.
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto, Howard & West Sts., Balto.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Chipman Chem. Co., Bound Brook, N. J.
Clifton Chemical Co., 62 William St., N. Y.
Corn King Co., Cedar Rapids, Ia.
Crystal Soap & Chem. Co., 6300 State Rd., Phila. 35
Davies-Young Soap Co., Dayton, O.
E. I. du Pont de Nemours & Co., Wilmington, Dela.

Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, Skillman, N. J.
Haag Laboratories, Inc., Blue Island, Ill.
Heckathorn & Co., Richmond, Calif.
Higley Chem. Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Hunt Mfg. Co., Lisbon Rd., Cleveland
Kemico Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Ketoid Chem. Co., 339 S. Van Deventer, St. Louis
Koppers Co., Koppers Bldg., Pittsburgh
Lakeland Labs., 625 15th Ave., South, Minneapolis
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
Mathieson Chemical Corp., Mathieson Bldg., Balto.
McLaughlin, Gormley, King Co., Minneapolis, Minn.
Michigan Chem. Corp., St. Louis, Mich.
Nopco Chemical Co., Harrison, N. J.
Peck's Prod. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Private Brands, Inc., 300 S. 3 St., Kansas City, Kan.
J. W. Quinn Drug Co., Greenwood, Miss.
Rex Research Corp., Toledo
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Shell Chemical Corp. 50 W. 50th St., N. Y. 19
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
Stauffer Chemical Co., 420 Lexington Ave., N. Y.
Thompson-Hayward Chem. Co., 2915 Southwest Blvd., Kansas City, Mo.
Trio Chem. Wks., 341 Scholes St., Brooklyn 6
Uncle Sam Chem. Co., 575 W. 131st St., N. Y.
U. S. Sanitary Spec. Corp., 1001 S. California Blvd., Chicago 12
James Varley & Sons, 1200 Switzer Ave., St. Louis
Velsicol Corp., 330 E. Grand Ave., Chicago
Victory Chem. Co., 148 Fairmount Ave., Phila.
Warren Chemical Prods. Co., 1138 Main Ave. SW, Warren, O.
Robert C. White Co., Chestnut Hill, Phila.
Whitmire Res. Labs., 339 S. Vandeventer, St. Louis

CAUSTIC POTASH (see Potash, Caustic)

CATTLE SPRAY BASE (see Petroleum Bases)

CAUSTIC POTASH (see Potash, Caustic)

CAUSTIC SODA

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Belle Alkali Co., Belle, W. Va.
Brown Company, Portland, Me.
John A. Calo Co., 19 Rector St., N. Y. 6
Champion Fibre Co., Canton, N. C.
Columbia Southern Chem. Corp., 5th Ave. & Bellefield, Pittsburgh
Diamond Alkali Co., Cleveland 14
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Julius Hyman & Co., Denver, Colo.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Chemical Corp., Baltimore 3
Michigan Electrochemical Co., Menominee, Mich.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis 4
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Niagara Smelting Corp., Niagara Falls, N. Y.
Chas. Page & Co., 50 E. 42nd St., N. Y. 17
Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.

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Cleaning compounds, dry
DDT
Detergents (alkali type)
Detergents, synthetic (basic materials)
Detergents, synthetic (compounded)
Disinfectants, chlorinated
Disinfectants, quaternary ammonium

Drain pipe solvent
Emulsifying agents
Ethylene glycols
Floor scrub soaps
Floor waxes
Fumigants (cyanides, chlorpicrin, methyl bromide, etc.)
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Insecticide concentrates
Laundry soaps (fluoride, etc.)
Quaternary ammonium compounds
Quaternary ammonium disinfectants
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Sequestering agents
Soda ash
Soda (modified)
Sodium bicarbonate
Solvents (chlorinated)
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Wetting agents

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CAUSTIC SODA (Contd.)

Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Virginia-Carolina Chem. Corp., Richmond, Va.
Welch, Holme & Clark Co., 439 West St., N. Y. 14
Westvaco Chem. Div., Food Mach. & Chem. Corp., 405
Lexington Ave., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chemical Corp., Michigan Alkali Div.,
Wyandotte, Mich.

CEDAR LEAF OIL (see Essential Oils)

CEDARWOOD OIL (see Essential Oils)

CERESIN WAX (see Waxes)

CETYL ALCOHOL (see also Fatty Alcohols)

American Alcolac Corp., 3440 Fairfield Rd., Baltimore 26
Bopf Whittam Corp., Linden, N. J.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
M. Michel & Co., 90 Broad St., N. Y.
Robinson-Wagner Co., 110 E. 42nd St., N. Y.

CHALK (Calcium Carbonate)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
H. J. Baker & Bro., 271 Madison Ave., N. Y.
Binney & Smith Co., 41 E. 42nd St., N. Y.
Charles B. Chrystal Co., 53 Park Pl., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Fezandie & Sperrle, 205 Fulton St., N. Y.
Hammill & Gillespie, 225 Broadway, N. Y. 7
Charles Hardy, Inc., 420 Lexington Ave., N. Y.
Industrial Chem. Sales Div., West Va. Pulp & Paper
Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.

James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Rosenthal Bercow, 25 E. 26 St., N. Y. 10
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Tamms Industries, Inc., 228 N. La Salle St., Chicago
Charles A. Wagner Co., 813 Callowhill St., Phila.
Whittaker, Clark & Daniels, Inc., 260 W. Broadway,
New York
Witco Chemical Co., 295 Madison Ave., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
Wyandotte, Mich.

CHAMOIS

Addison Sponge Co., 118 E. Court St., Cincinnati
Allied Industrial Prods. Co., 620 N. Michigan St., Chicago
Amer. Sponge & Chamois Co., 47 Ann St., N. Y.
Atlas Sponge Co., 291 Church St., N. Y.
Great Eastern Sponge & Chamois Co., 833 N. Patt. Pk.
Ave., Baltimore
Jos. Neihaus Co., 341 W. 4th St., Cincinnati
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Schroeder & Tremayne, 500 N. Comm. St., St. Louis

CHELATING AGENTS (See Sequestering Agents)

CHILLING ROLLS

Consolidated Prods. Co., 15 Park Row, N. Y. 38, (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machy. Co., Hawthorne, N. J.
Huber Machine Co., 259-46th St., Brooklyn
J. M. Lehmann Co., 566 New York Ave., Lyndhurst, N. J.
Lukens Steel Co., Coatesville, Pa.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago (Used)
Proctor & Schwartz, 7th St. & Tabor Rd., Philadelphia
Chas. Ross & Son Co., 148 Classon Ave., Brooklyn 5
C. G. Sargent's Sons Corp., Graniteville, Mass.
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Machine Co., 5974 E. Tabor Rd., Phila.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

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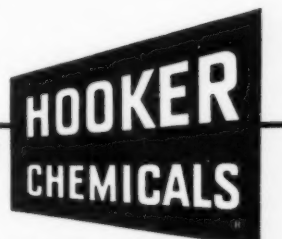
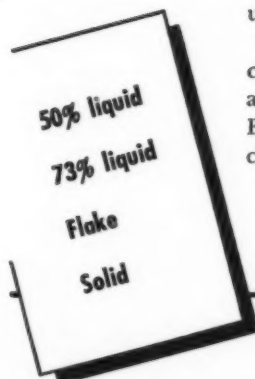
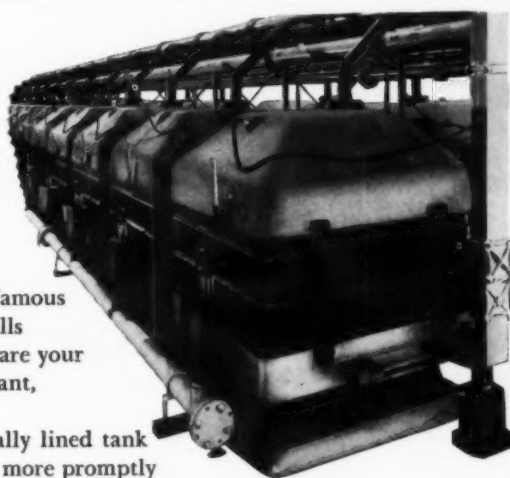
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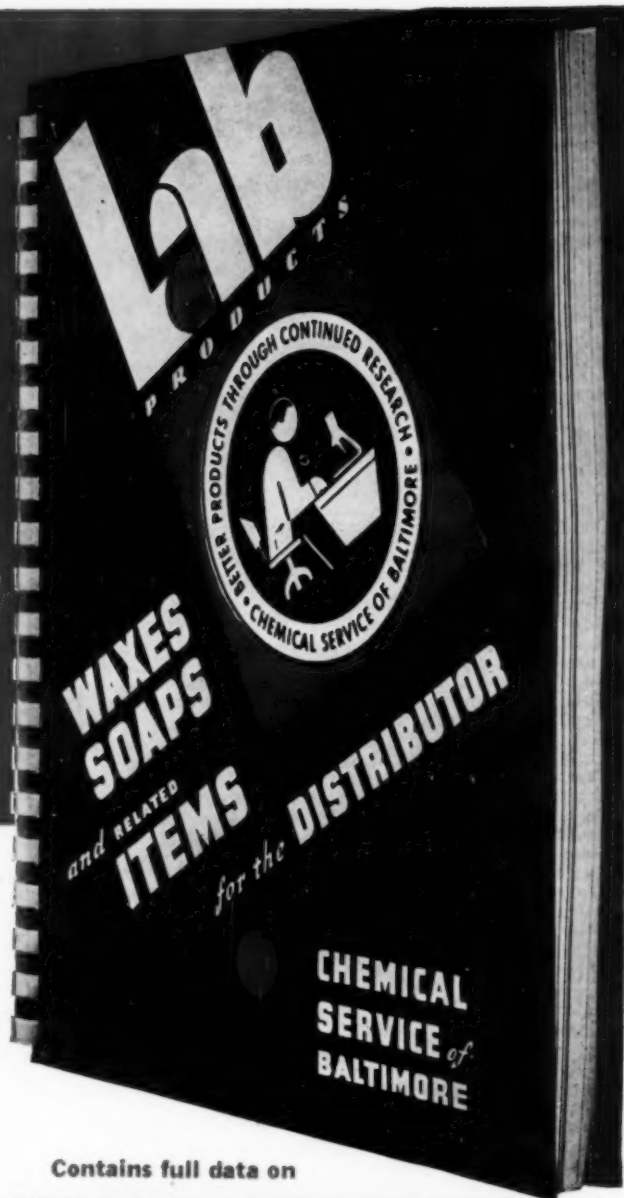
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Bronson Supply Co., 3120 State St., Erie, Pa.
Chemical Compound Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Click Chemical Co., Columbus & Carleton Aves., Mt. Vernon, N. Y.
Chicago Sanitary Prod. Co., 3100 S. Throop St., Chicago
Clifton Chem. Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Continental Car-Na-Var Corp., Brazil, Ind.
Copeland Laboratories, 774 College St., Toronto, Can.
Crystal Soap & Chem. Co., 6300 State Rd., Phila.
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City, Mo.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, Skillman, N. J.
Higley Chemical Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hygiene Products, 169 St. Cyr, Montreal, Can.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Idico Prods. Co., 1 W. 125th St., N. Y.
Industrial Labs., 17-19 W. Conway St., Baltimore
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Calif.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Kleenaire Kemikils, Inc., 2227 24th St., Detroit
Klix Chem. Co., 2460 Third St., San Francisco
Koppers Co., Pittsburgh 19
Midland Labs., Dubuque, Iowa
North Coast Soap & Chem. Wks., Seattle, Wash.
Paradize Products Corp., 378 Bergen Blvd., Fairview, N. J.
Pecks' Prods. Co., 610 E. Clarence Ave., St. Louis
Puritan Chemical Co., Atlanta, Ga.
The Puro Co., 2801 Locust St., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., 333 Hollenbeck St., Rochester 5, N. Y.
I. Schneid, Inc., 916 Ashey St., N.W., Atlanta, Ga.
Science Industries, 609-15 Geyer Ave., St. Louis 4
Solvay Sales Div., Allied Chemical & Dye Corp., 40 Rector St., N. Y. 6
Trio Chem. Wks., 341 Scholes St., Bklyn.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Specialties Corp., 1001 S. California Blvd., Chicago 12
Vestal, Inc., 4963 Manchester St., St. Louis 10
G. H. Wood & Co., Toronto, Canada
Woodlets, Inc., Portland, Pa.
York Chemical Co., 23 Dean St., Bklyn.

DEODORIZING BLOCK PERFUMES (see Perfuming Compounds)

DEODORIZING BLOCK PRESSES (see Presses)

DEODORIZING AND BLEACHING EQUIPMENT (For Oils)

Blaw-Knox Corp., Chicago
Foster-Wheeler Co., 165 Broadway, N. Y.
William Garrigue & Co., 9 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Alan Porter Lee Associates, 18 South St., Morristown, N. J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Pfaudler Co., 89 East Ave., Rochester, N. Y.
F. J. Stokes Machine Co., 5918 Tabor Rd., Phila.
Wurster & Sanger, 5201 Kenwood Ave., Chicago

DERRIS PRODUCTS

Chipman Chem. Co., Bound Brook, N. J.
Derris, Inc., 120 Wall St., N. Y.

Enco Chem. Corp., 441 Lexington Ave., N. Y.
Greene Trading Co., 60 Wall St., N. Y.
Heckathorn & Co., Richmond, Calif.
Ketoid Chem. Co., 549 W. Washington, Chicago
Miller Products Co., 1932 S. W. Water Ave., Portland, Ore.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Stauffer Chemical Co., 420 Lexington Ave., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y. C.
Whitmire Research Corp., 339 S. Vandeventer, St. Louis

DETERGENTS, Antiseptic Liquid

Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Buckingham Wax Co., 51-03 Van Dam St., LIC, N. Y.
Chem. Service Co. of Balto., Howard and West Sts., Balto.
Eagle Soap Corp., Huntington, Ind.
Emulsol Corp., 59 E. Madison St., Chicago
Essential Chem. Co., 2200 N. 32nd St., Milwaukee 8
Fuld Bros., 702 S. Wolfe St., Baltimore
Haag Laboratories, 14010 S. Seeley Ave., Blue Island, Ill.
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Masury Young Co., 76 Roland St., Boston 29
Pecks Prods. Co., 610 E. Clarence Ave., St. Louis
Piatt & Smillie Chemicals, 2329 Pine St., St. Louis 3
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Tech Soap Mfg. Co., 7310 S. Chicago Ave., Chicago
Uncle Sam Chem. Co., 575 W. 131st St., N. Y. 27
James Varley & Sons, 1200 Switzer Ave., St. Louis
G. H. Wood & Co., Toronto, Canada
Woodlets, Inc., Portland, Penna.

DETERGENT SOLUTIONIZERS, for dispensing detergent and soap solutions ready for use. (see Soap Solutionizers)

DETERGENTS (Alkali Type)

American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 47-02 5th St., L. I. City
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st St., Chicago
Bilco Chemical Co., 607 DeGraw St., Bklyn.
Blockson Chemical Co., Joliet, Ill.
Boston Chemical Industries, 64 E. Brookline St., Boston
Brilco Laboratories, 1553 63rd St., Brooklyn 19
Britex Corp., 17 Lewis Wharf, Boston 10
Bronson Supply Co., 3120 State St., Erie, Pa.
Buckingham Wax Co., 51-03 Van Dam St., LIC, N. Y.
Calgon, Inc., Hagan Bldg., Pittsburgh 30
Candy & Co., 2515 W. 35th St., Chicago
Carlstadt Chem. Co., Carlstadt, N. Y.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clarkson Laboratories, 919 N. 9 St., Phila. 23
Columbia-Southern Chem. Corp., Pittsburgh, Pa.
Continental Car-Na-Var Corp., Brazil, Ind.
Copeland Laboratories, 774 College St., Toronto, Can.
Cowles Chemical Co., 7016 Euclid Ave., Cleveland
Curran Corp., Lawrence, Mass.
Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14
Diversey Corp., 53 W. Jackson Blvd., Chicago
E. F. Drew & Co., 15 E. 26th St., N. Y.
DuBois Soap Co., Cincinnati
E. I. du Pont de Nemours & Co., Wilmington, Del.
East Coast Soap Corp., 89 Coffey St., Bklyn. 31
Economics Laboratory, Guardian Bldg., St. Paul
Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Hercules Powder Co., Wilmington, Del.
Higley Chemical Co., Dubuque, Iowa
Hysan Prods. Co., 932 W. 38th Place, Chicago
Knoxall Corp., Indianapolis, Indiana

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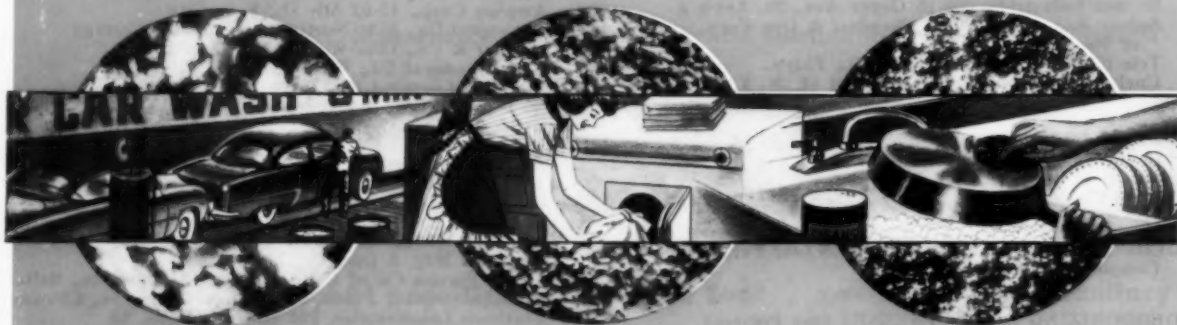
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Write or telephone the Oronite office nearest you for full information.

D-40 is available in 3 particle sizes

Flakes, granules, powder — all are of the same high quality and purity. Use the one that best fits your requirements.

Photographs show D-40 particle sizes enlarged 5 times.



D-40SF (Flakes)

D-40 (Granules)

D-40FG (Powder)

The quality and performance of detergent materials made by Oronite have been proved in more than a billion pounds of household and industrial cleaning compounds. Large-scale production facilities and experience provide Oronite the background for better detergents.

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DETERGENTS, ALKALI TYPE (Contd.)

H. Krevit & Co., 73 Welton St., New Haven, Conn.
Los Angeles Soap Co., 617 E. 1st St., Los Angeles
A. R. Maas Chem. Co., South Gate, Calif.
Mathieson Chemical Corp., Baltimore 3
M. Michel & Co., 90 Broad St., N. Y. 4
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Murro Chem. Co., P. O. Box 185, Asheville, N. C.
National Milling & Chem. Co., 4601 Nixon St., Phila. 27
Peck's Prods. Co., 610 E. Clarendon Ave., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Philadelphia Quartz Co., Public Ledger Bldg.,
Independence Sq., Phila. 6
Port Huron Detergent Co., Port Huron, Mich.
Quaker Chem. Prods. Co., Conshohocken, Pa.
Refined Prods. Corp., Lyndhurst, N. J.
Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
G. S. Robins & Co., 126 Chouteau Ave., St. Louis 2
Rulon Laboratories, Bryant Bldg., Kansas City
Rumford Co., Rumford, R. I.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Savin Products Co., 1221 Dorchester Ave., Boston 25
Science Industries, 609 Geyer Ave., St. Louis
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Stevens Soap Corp., 200 Sullivan St., Brooklyn, N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Stepan Chem. Co., 1353 N. Branch St., Chicago 22
Swift & Co., Chicago
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Tech Soap Mfg. Co., 7310 S. Chicago Ave., Chicago
Thompson-Hayward Chem. Co., Kansas City 8, Mo.
Jos. Turner & Co., Ridgefield, N. J.
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chem. Co., 575 W. 131st St., N. Y. 27
U. S. Sanitary Spec. Corp., 1001 S. California Ave.,
Chicago 12
Virginia-Carolina Chem. Corp., Richmond, Va.
Warwick Chemical Co., 10-10 44th Ave., L. I. C., N. Y.
Westvac Chem. Div., Food Machy. & Chem. Corp.,
405 Lexington Ave., N. Y.

Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chemicals Corp., J. B. Ford Div., Wyandotte, Mich.

DETERGENTS, Synthetic (Basic Materials)

Alrose Chem. Co., Box 1294, Providence, R. I.
American Alcolac Corp., 3440 Fairfield Rd., Baltimore 26
American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Antara Chemicals, Div. General Dyestuff Corp., 435
Hudson St., N. Y. 14
Armour & Co., 1355 W. 31 St., Chicago 9
Arnold, Hoffman & Co., 55 Canal St., Providence, R. I.
Atlantic Refining Co., 260 S. Broad St., Phila.
Atlas Powder Co., Wilmington, Del.
Bersworth Chemical Co., Framingham, Mass.
Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
E. F. Drew & Co., 15 E. 26 St., N. Y. 10
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Emulsol Corp., 59 E. Madison St., Chicago
Enjay Co., 15 W. 51 St., N. Y. 19
Hercules Powder Co., 929 King St., Wilmington, Del.
Kearny Mfg. Co., Kearny, N. J.
Kessler Chem. Co., State Rd., Phila. 35
Maywood Chem. Wks., Maywood, N. J.
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
M. Michel & Co., 90 Broad St., N. Y.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
National Aniline Div., Allied Chem. & Dye Corp.,
40 Rector St., N. Y.
National Milling & Chem. Co., 4601 Nixon St., Phila. 27
Ninol Laboratories, 1719 S. Clinton St., Chicago 16
Nopco Chem. Co., Harrison, N. J.
Oil States Petroleum Co., 233 Broadway, N. Y.
Onyx Oil & Chem. Co., Warren & Norris Sts., Jersey
City, N. J.
Oronite Chem. Co., 38 Sansome St., San Francisco
Refined Prods. Corp., Lyndhurst, N. J.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Sharples Chemicals, Inc., 123 S. Broad St., Phila.
Shell Chem. Corp., 50 W. 50th St., N. Y. 20
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.

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Excellent foam stability, especially at high pH. Very low in dust and odor. Outstanding wetting.

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Excellent detergency. Light in color. Less than 1% moisture. Screened, not ground, hence low in fines.

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80-85% active organic material. For blending where high active is required in finished product. Density, 3.

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Density, .45-5. Easy to perfume due to low odor. Low in dust content. Excellent money value.

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Clear amber liquid. 25% active. 3% sulfate. Excellent for compounding. Can be tailored to meet your particular requirements.

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Concentrated alkyl sulfonic acid. 88% organic, 8% sulfuric acid and 3% moisture.

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L. Sonneborn Sons, 300—4th Ave., N. Y.
Stepan Chem. Co., 1353 N. Branch St., Chicago 22
Swift & Co., Chicago
U. S. Industrial Chemicals, 60 E. 42 St., N. Y. 17
Ultra Chemical Wks., 2 Wood St., Paterson, N. J.
Van Dyk & Co., Belleville 9, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y. 14
Verona Chem. Co., 26 Verona Ave., Newark, N. J.
Jacques Wolf, Passaic, N. J.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
Wyandotte, Mich.

DETERGENTS, Synthetic (Compounded)

Allied Block Chemicals Co., 430 Bingham St., Pittsburgh
Alrose Chem. Co., Box 1294, Providence, R. I.
American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Analab Labs., 285 Franklin St., Boston 10
Antara Chemicals, Div. General Dyestuffs Corp., 435
Hudson St., N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Arnold, Hoffman & Co., 55 Canal St., Providence, R. I.
Atlantic Refining Co., 260 S. Broad St., Phila.
Atlas Powder Co., Wilmington, Dela.
B. T. Babbitt, Inc., 386—4th Ave., N. Y. 16
Barton Chem. Co., 3907 S. Langley Ave., Chicago
Brilco Laboratories, 1553 63rd St., Brooklyn 19
Britex Corp., 17 Lewis Wharf, Boston 10
Bronson Supply Co., 3120 State St., Erie, Pa.
Buckingham Wax Co., 51-03 Van Dam St., L. I. C., N. Y.
Burkhart-Schier Chem. Co., Chattanooga 2, Tenn.
Carlstadt Chem. Co., Carlstadt, N. J.
Chem. Mfg. & Dist. Co., Easton, Pa.
Chemical Service Co. of Baltimore, Balto. 30
Clarkson Laboratories, 919 N. 9th St., Phila. 23
Click Chemical Corp., Columbus & Carleton Aves., Mt.
Vernon, N. Y.
Chicago San. Prod. Co., 3100 S. Throop St., Chicago 8
Clifton Chem. Co., 62 William St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Copeland Laboratories, 774 College St., Toronto, Can.
Cowles Chemical Co., 7016 Euclid Ave., Cleveland
Curran Corp., Lawrence, Mass.
Davies-Young Soap Co., Dayton 1, O.
E. F. Drew & Co., 15 E. 26 St., N. Y. 10
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
East Coast Soap Corp., 89 Coffey St., Bklyn.
Essential Chem. Co., 2200 N. 32nd St., Milwaukee 8
Fine Organics, Inc., 211 E. 19th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City,
Mo.
Glyco Products Co., 26 Court St., Brooklyn, N. Y.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Griffin Chem. Co., 1000 16th St., San Francisco
Haag Laboratories, 14010 S. Seeley Ave., Blue Island,
Ill.
Hercules Powder Co., Wilmington, Del.
Hewitt Soap Co., Dayton, O.
E. F. Houghton & Co., 303 W. Lehigh Ave., Phila.
Kearny Mfg. Co., Kearny, N. J.
H. Krevit & Co., 73 Welton St., New Haven, Conn.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Los Angeles Soap Co., 617 E. 1st St., Los Angeles 51
Masury Young Co., 76 Roland St., Boston 29
Mathieson Chemical Corp., Baltimore 3
Maywood Chemical Works, Maywood, N. J.
M. Michel & Co., 90 Broad St., N. Y.
Michigan Chemical Corp., St. Louis, Mich.
Midland Laboratories, Dubuque, Iowa
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Murro Chemical Co., P. O. Box 185, Asheville, N. C.
National Aniline Div., Allied Chem. & Dye Corp.,
40 Rector St., N. Y.
Ninol Laboratories, 1719 S. Clinton St., Chicago 16
Nopco Chemical Co., Harrison, N. J.
Oil States Pet. Co., 233 Broadway, N. Y.
Onyx Oil & Chemical Co., Warren & Morris Sts.,
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Atlantic ULTRAWETS are alkyl aryl sulfonate type anionic surface-active agents with excellent sudsing and wetting properties, especially in hard water. Though mild and neutral, their pronounced surface activity makes them powerful detergents.

They are light amber to white in color and almost odorless. They are available in liquid, flake and bead form.

The flakes and beads are available in two densities and are used primarily as constituents in dry-mixed compounds. As liquids, they are used in stock solutions for industrial processing, in compounding liquid products, and in preparing liquids or slurries for drum or spray drying.

Chemically the ULTRAWETS are stable in acid and alkaline media, and their low sensitivity to calcium, magnesium and other heavy metal ions makes them especially desirable in hard water. They are compatible with acid, alkaline and neutral salts, soaps, anionic and nonionic detergents and other materials commonly used in cleaning compounds. However, like all anionic detergents, they react and should not be used with cationic (quaternary ammonium) surface-active agents.

The ULTRAWETS have been used to advantage in many types of products and applications. Among them are: dishwashing compounds, detergents for fine fabrics, scouring powders, paint cleaners, wallpaper removers, light and heavy duty household detergents, window cleaners, upholstery and rug shampoos, automobile and aircraft body cleaners, liquid soaps, shampoos, shaving creams, beard softeners, bubble bath preparations, bottle washing compounds, dairy cleaners, glass rinses, laundry detergents, metal cleaners, for wetting out, dye leveling, scouring, wool carbonizing assistant, and so on.

Currently available ULTRAWETS are:

	Appearance	% Solids	% Active Minimum	% Sodium Sulfate	Haze PL °F
Ultrawet 30DS	Clear, pale yellow liquid	30	25.5	4.5	85
Ultrawet 35KX	Light amber slurry	35	31.5	3.5	90
Ultrawet DS*	Light cream-colored flakes	100	85.0	15.0	—
Ultrawet K*	Light cream-colored flakes	100	85.0	15.0	—
Ultrawet SK*	White, free-flowing beads	100	35.0	65.0	—
Ultrawet 60L	Clear, pale yellow liquid	60	60.0	—	14

* Available in two densities.

* Liquid ULTRAWETS are supplied in 480-lb. (55-gal.) steel drums and in tank cars; dry-flaked products in 200-lb. (55-gal.) fiber drums; and bead form products in 200-lb. fiber drums and 40- and 25-lb. 5-ply paper bags.

Samples and further information on the ULTRAWETS will be supplied on request.

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PERFORMANCE TESTS

SURFACE TENSION—in dynes/cm @ 25° C					
	Concentration Wt. % Product	Distilled Water	300 ppm Hardness	Distilled Water 2% NaOH	2% H ₂ SO ₄
Ultrawet 30DS	0.15 0.50	29.2 28.1	27.4 27.0	27.2 27.3	27.1 27.0
Ultrawet DS	0.05 0.15	28.9 28.4	27.6 27.5	27.5 27.3	27.7 27.5
Ultrawet 35KX	0.15 0.50	31.3 31.2	27.5 27.3	27.5 —	27.4 —
Ultrawet K	0.05 0.15	29.5 28.6	27.2 27.3	27.0 27.0	27.5 27.7
Ultrawet SK	0.05 0.15	31.7 28.2	27.8 27.4	27.3 27.0	27.7 27.1
Ultrawet 60L	0.05 0.10	30.0 27.7	27.5 27.4	—	—

CLARKSON-DRAVES WETTING TEST—in seconds @ 25° C					
	Concentration Wt. % Product	Distilled Water	300 ppm Hardness	Distilled Water 2% NaOH	2% H ₂ SO ₄
Ultrawet 30DS	0.15 0.50	110 7	105 7	63 6	48 4
Ultrawet DS	0.05 0.15	100 8	85 8	50 6	38 4
Ultrawet 35KX	0.15 0.50	22 2.7	25 3	74* —	50* 12*
Ultrawet K	0.05 0.15	26 5	40 5	50 12*	40 5
Ultrawet SK	0.05 0.15	300+ 19	300+ 21	300+ 40*	300+ 30
Ultrawet 60L	0.10 0.20	28 7.3	28 8.2	—	—

* Solution hazy, not completely miscible

ROSS-MILES FOAM TEST—in millimeters @ 110° F					
	Concentration Wt. % Product	Initially	Distilled 5 Min.	300 ppm Initially	5 Min.
Ultrawet 30DS	0.15 0.50	200 245	170 215	135 275	110 240
Ultrawet DS	0.05 0.15	200 240	170 215	154 270	130 240
Ultrawet 35KX	0.15 0.50	220 260	185 230	225 265	195 230
Ultrawet K	0.05 0.15	220 245	190 215	200 275	165 235
Ultrawet SK	0.05 0.15	205 235	175 210	50 240	45 205
Ultrawet 60L	0.10 0.25	220 250	190 220	165 245	140 215

DETERGENTS, SYNTHETIC (Compounded) (Contd.)

Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Quaker Chem. Prods. Co., Conshohocken, Pa.
Refined Prods. Corp., Lyndhurst, N. J.
Rex-Cleanwall Corp 238 S. Murphy Ave., Brazil, Ind.
Richards Sales Corp., Jersey City, N. J.
Sandoz Chem. Wks., 61 Van Dam St., N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Savin Products Co., 1221 Dorchester Ave., Boston 25
Science Industries, 609 Geyer Ave., St. Louis
Sharples Chemicals, Inc., 123 S. Broad St., Phila.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Sugar Beet Prods. Co., Saginaw, Mich.
Synthetic Chemicals, Inc., 335 Boulevard, Paterson 4,
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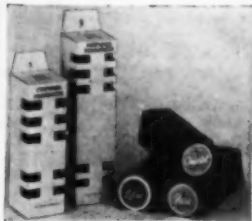
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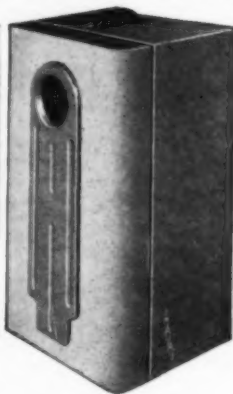


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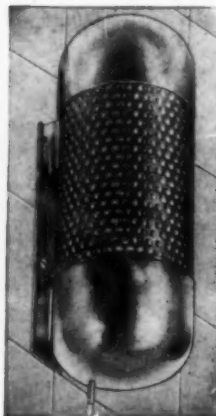
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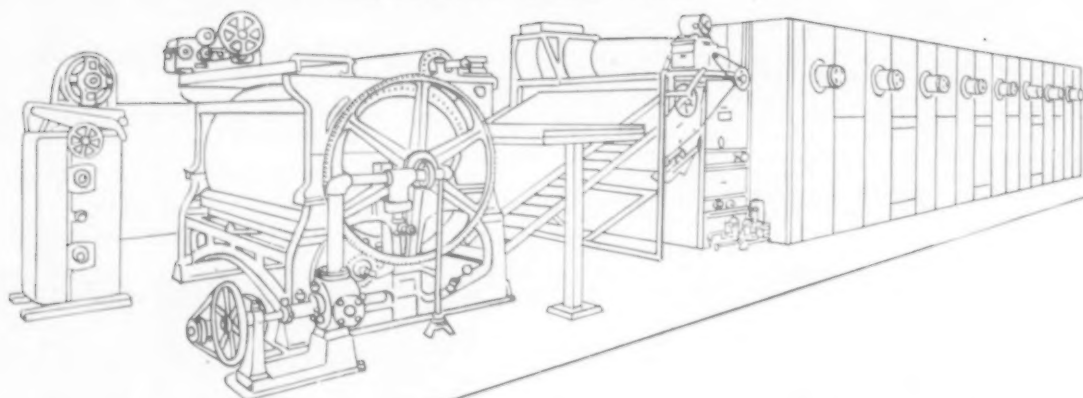
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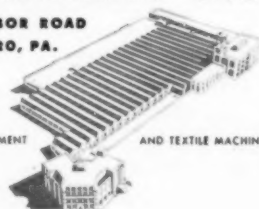
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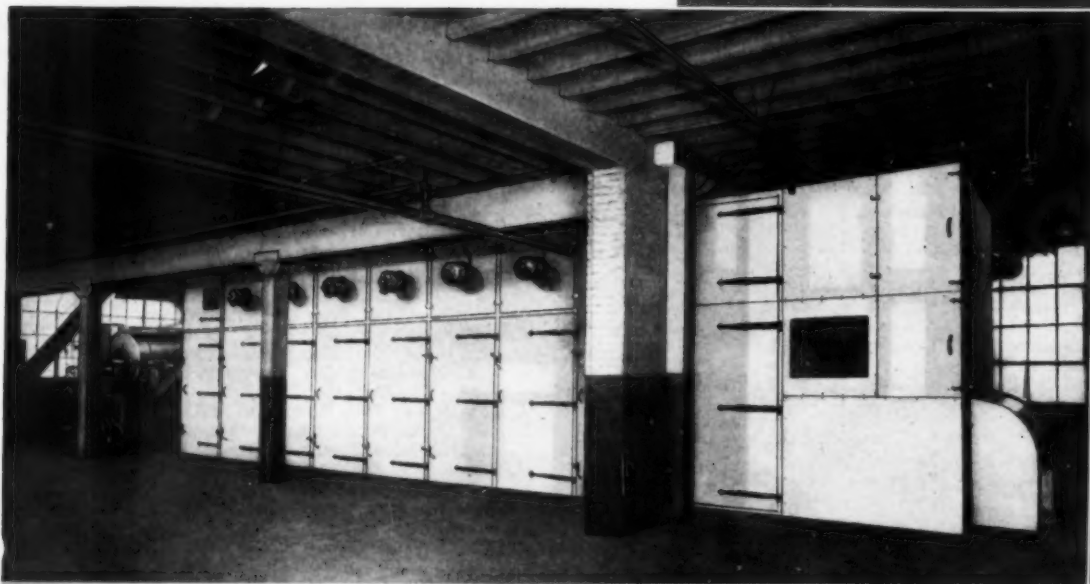
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M. Michel & Co., 90 Broad St., N. Y. 4
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Nopco Chemical Co., Harrison, N. J.
North Coast Chem. & Soap Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Puritan Co., 573 Lyell Ave., Rochester, N. Y.
Riverside Mfg. Co., 4919 Conn St., St. Louis
John T. Stanley Co., 642 W. 30th St., N. Y.
R. R. Street & Co., 561 W. Monroe St., Chicago
Swift & Co., Chicago
Trio Chemical Wks., 341 Scholes St., Bklyn. 6
Ultra Chem. Wks., Inc., 2 Wood St., Paterson, N. J.
U. S. Sanitary Specialties Corp., 1001 S. California Blvd., Chicago 12
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Warwick Chemical Co., 10-10 44th Ave., L. I. C., N. Y.
G. H. Wood & Co., Toronto, Ont., Canada
Woodlets, Inc., Portland, Pa.

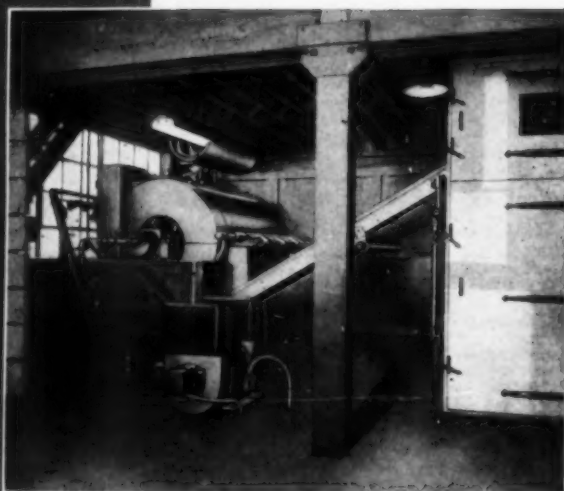
DRYERS (Continuous for CHIP SOAPS)

Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
Houchin Machinery Co., Hawthorne, N. J.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
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The installation illustrated is at Standard Soap Co., Camden, N. J. Production is 2000 lbs. tallow base laundry soap chips per hour, with intake moisture of 34% and leaving moisture of 8%. Harder drying soap averages 1600 lbs. per hour. Chip thickness of 10/1000 to 12/1000 is consistent and even across full width of chilling roll and feed apron conveyor.

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Buffalo Foundry & Machine Co., Buffalo, N. Y.
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Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
Drying Systems, Inc., 1800 Foster Ave., Chicago
Ellis Dryer Co., 2444 N. Pulaski Ave., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Industrial Process Engineers, 8 Lister Ave.,
Newark 5, N. J.
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., 566 New York Ave., Lyndhurst, N. J.
Louisville Drying Equipment Co., Louisville, Ky.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago (Used)
Oven Equipment Co., New Haven, Conn.
Patterson-Kelley Co., East Stroudsburg, Pa.
Philadelphia Drying Mach. Co., Philadelphia
H. K. Porter Co., Oliver Bldg., Pittsburgh
Proctor & Schwartz, 7th St. & Tabor Rd., Philadelphia
Chas. Ross & Son Co., 148 Classon Ave., Brooklyn 5
C. G. Sargent's Sons Corp., Graniteville, Mass.
Ernest Scott & Co., Fall River, Mass.
F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
B. F. Sturtevant Co., Hyde Park, Boston
Western Precipitation Corp., 1016 W. 9th St.,
Los Angeles

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Chicago 40
Columbus-Dixon, Inc., 333 E. 23rd St., N. Y.
Consolidated Prods. Co., 15 Park Place, N. Y. 38 (Used)
Cyclone Blow Pipe Co., 2552 W. 21st St., Chicago
Dust Filter Co., 160 N. La Salle St., Chicago
Lamson Corporation, Syracuse, New York
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Chicago (Used)
Owens-Corning-Fiberglas Corp., Toledo, Ohio
Pangborn Corp., 10 Pangborn Blvd., Hagerstown, Md.
Pulverizing Machinery Company, Summit, N. J.
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Torit Mfg. Co., 8301 S. Vernon Ave., Chicago
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F. H. Lawson Co., Cincinnati
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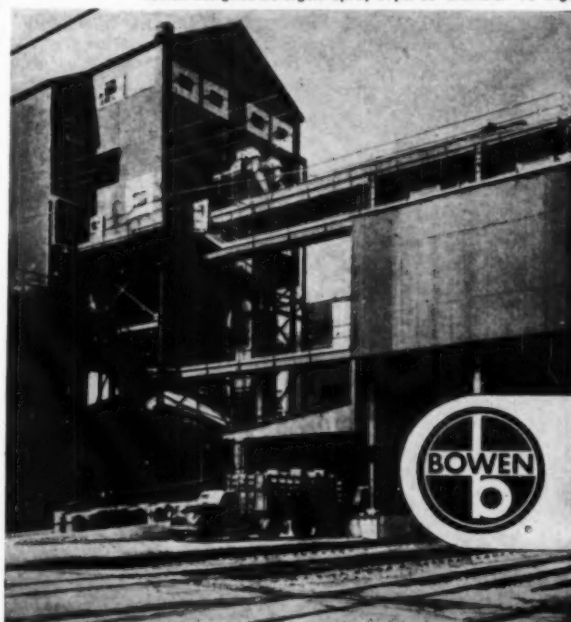
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P. Wohl & Sons, 85 Bayard St., N. Y.

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Antara Chemicals, Div. General Dyestuff Corp., 435
Hudson St., N. Y.
Carbide & Carbon Chem., 30 E. 42nd St., N. Y. 17
Commercial Solvents Corp., 17 E. 42nd St., N. Y. 17
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Dela.
Emulsol Corp., 59 E. Madison St., Chicago
Hercules Powder Co., Wilmington, Dela.
Heyden Chemical Corp., 393 Seventh Ave., N. Y.
Jefferson Chemical Co., 711 5th Ave., N. Y. C.
Koppers Co., Pittsburgh, Pa.
M. Michel & Co., 90 Broad St., N. Y. 4
Ninol Laboratories, 1719 S. Clinton St., Chicago
Sharples Chemicals, Inc., 123 N. Broad St., Phila. 1

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American Colloids Co., Merchandise Mart Plaza, Chicago
American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Antara Chemicals, Div. General Dyestuff Corp., 435
Hudson St., N. Y. 14
Arabol Mfg. Co., 110 E. 42nd St., N. Y.
Archer-Daniels-Midland Co., Minneapolis 2
Armour & Co., 1355 W. 31st St., Chicago
Arnold, Hoffman & Co., 55 Canal St., Providence, R. I.
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Atlas Powder Co., Wilmington, Del.
Borne Scrymser Co., 632 S. Front St., Elizabeth, N. J.
Burkhart-Schier Chem. Co., Chattanooga 2, Tenn.
John H. Calo Co., 19 Rector St., N. Y. 6
Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Diamond Alkali Co., 300 Union Commerce Bldg.,
Cleveland 14
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
E. I. du Pont de Nemours & Co., Wilmington Del.
El Dorado Oil Wks., 311 California St., San Francisco 4
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
Emulsol Corp., 59 E. Madison St., Chicago
Enjay Co., 15 W. 51st St., N. Y. 19
Fine Organics, Inc., 211 E. 19th St., N. Y. 3
Glyco Prods. Co., 26 Court St., Bklyn. 2
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Griffin Chem. Co., 1000—16th St., San Francisco
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Hercules Powder Co., Wilmington, Dela.
Industrial Materials Co., 1017 McCall St., Houston, Tex.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Kearny Mfg. Co., Kearny, N. J.
Kessler Chem. Co., 7272 State Rd., Phila.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y. 13
N. I. Malmstrom & Co., 147 Lombardy St., Bklyn.
M. Michel & Co., 90 Broad St., N. Y.
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Maywood Chemical Works, Maywood, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
National Southern Products, Tuscaloosa, Ala.
Nopco Chemical Co., Harrison, N. J.
Ninol Laboratories, 1719 S. Clinton St., Chicago 16
Onyx Oil & Chemicals Co., Warren & Morris Sts.,
Jersey City 2
Oronite Chem. Co., 38 Sansome St., San Francisco
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
Pennsylvania Refining Co., Butler, Pa.
Philadelphia Quartz Co., Public Ledger Bldg.,
Independence Sq., Phila. 6
Pylam Products Co., 799 Greenwich St., N. Y.
Quaker Chem. Prods. Co., Conshohocken, Pa.

Refined Products Corp., Page and Newkirk Ave.,
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Robinson Wagner Co., 110 E. 42nd St., N. Y.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
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Sharples Chemicals, Inc., 123 S. Broad St., Phila. 9
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Thompson-Hayward Chem. Co., Kansas City 8, Mo.
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Arthur C. Trask Co., 4103 S. LaSalle St., Chicago 9
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Warwick Chemical Co., 10-10 44th Ave., L. I. C., N. Y.
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Jacques Wolf & Co., Passaic, N. J.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
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Aroescent, Inc., Main & Chestnut Sts., Dobbs Ferry, N. Y.
Berje Prods. Co., 616 W. 44th St., N. Y. 18
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Dow Chemical Co., Bush Aromatics Div., 629 Grove St.,
Jersey City 2
P. R. Dreyer, Inc., 119 W. 19th St., N. Y.
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Falcon Chemical Co., 603 Johnson Ave., Brooklyn
Firmenich & Co., 250 W. 18th St., N. Y.
Fleuroma, Inc., 38 W. 21st St., N. Y.
Florasynth Laboratories, 5313 Olmstead Ave., N. Y. C.
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Samuel Klein, 4 Hanover Sq., N. Y. 4
Lautier Fils, 321 Fifth Ave., N. Y.
Pierre Lemoine, Inc., 67 Cortlandt St., N. J.
Geo. Lueders & Co., 427 Washington St., N. Y.
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Naugatuck Aromatics, 254 4th Ave., N. Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
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Polarome Co., 73 Sullivan St., N. Y. C.
F. Ritter & Co., 4001 Goodwin Ave., Los Angeles 39
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Roubechez, Inc., 8 E. 12th St., N. Y. 3
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Van Dyk & Co., Belleville, N. J.
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Jefferson Chemical Co., 711 Fifth Ave., N. Y.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405
Lexington Ave., N. Y.
Wyandotte Chemicals, Michigan Alkali Div., Wyandotte,
Mich.

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Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
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Acetophenone
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 " C-9
 " C-10
 " C-11
 " C-12
 Aldehyde C-8
 " C-9
 " C-11 (undecylenic)
 " C-12
 " C-14
 " C-16 (Methyl Phenyl
 Ethyl Glycidate)
 " C-18
 Allyl Caproate
Ambrain—the concentrated
 heart of Labdanum,
 without waxes or gum.
Amyl Cinnamic Aldehyde
 (Flomine Coeur)
 Anisic Acetate
 Anisic Alcohol
 Aubepine (Anisic Aldehyde)
Benzoin Coeur
 Benzophenone
 Benzyl Acetate
Benzyl Cinnamate
Benzyl Salicylate
 Bromstyrol
 Bois de Rose Terpeneless
Cedarwood Oil White
Cedrenol—Sweet, woody, rich—
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Cedrenyl Acetate—Lively,
 balsamic, sweet and lasting.
Cedrol
Cedrone
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Dimethyl Benzyl Carbinol—
 Flowery, valuable in floral
 bouquets, especially lilac.

Dimethyl Benzyl Carbinyl
 Acetate—Rich, Roseotto note,
 very floral, powerful and
 sweet in soap.
Dimethyl Octanol
Dimethyl Octanyl Acetate
Dimethyl Phenyl Ethyl Carbinol
 Diphenyl Oxide
 Ethyl Phenyl Acetate
 Eugenol U.S.P.
 Eugenol 95%
Fructose—Remarkably powerful
 fruit character for soap.
Galbanum Coeur
Geralex
Geraniol Absolute
Geraniol C.D.
Geraniol Coeur
Geranoxide—Rosy, good
 in soap.
Geranyl Acetate Coeur
 Geranyl Butyrate
 Geranyl Propionate
Girella—Inexpensive fresh spicy
 character suitable for use
 directly in soap products.
 Heliotropine
 Hydratropic Acetate
Hydratropic Alcohol—Very
 flowery and lasting in soap.
Hydratropic Aldehyde
Hydratropic Aldehyde
 Dimethyl Acetal
 Hydroxycitronellal
Ionone Extra C-1
Ionone Extra Pure
Ionone Alpha Coeur
Ionone Alpha Methyl
 Ionone Beta
 Ionone Methyl C-60
Ionone Methyl Gamma C-60
Irene Methyl Gamma
Iso Butyl Phenyl Acetate
 Iso Eugenol
Iso Jasmone—Very powerful
 jasmine body—very lasting
 in soap.

Iso Jasmone B—Technical grade
Jessemal—Rich Jasmine note,
 excellent in soap.
Labdanum Resin Absolute
Linalool B Extra
Linalool Coeur
Linalyl Acetate 90-92 %
 Methyl Benzoate
Methyl Cinnamate
 Methyl Hexyl Ketone
 Methyl Nonyl Acetaldehyde
 Methyl Phenyl Acetate
 Myrrh Coeur (Resin Absolute)
Nerol
 Nerolin
 Oak Moss Absolute
Olibanum Coeur
 (Resin Absolute)
Opoponax Resin Absolute
 Para Cresyl Acetate
 Para Cresyl Phenyl Acetate
Petitgrain Absolute
 Phenyl Acetaldehyde
 Dimethyl Acetal
Phenyl Ethyl Acetate
Phenyl Ethyl Alcohol
Phenyl Ethyl Benzoate
Phenyl Ethyl Cinnamate
Phenyl Ethyl Propionate
 Phenyl Propyl Alcohol
 Phenyl Propyl Propionate
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 International Engineering, 1145 Rolandry Ave., Dayton, O.
 Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago

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 Atlantic Refining Co., 260 S. Broad St., Philadelphia
 Emery Industries, Inc., Carew Tower, Cincinnati
 Griffin Chem. Co., 1000 16th St., San Francisco
 W. C. Hardesty Co., 41 E. 42nd St., N. Y.
 Oronite Chem. Co., 38 Sansome St., San Francisco
 Pennsylvania Refining Co., Butler, Pa.
 Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
 Sherwood Petroleum Co., Englewood, N. J.
 Skelly Oil Co., 605 W. 47th St., Kansas City, Mo.
 L. Sonneborn Sons, 300—4th Ave., N. Y.
 Stanco Distributors, Inc., 216 W. 14th St., N. Y.
 Standard Oil Co. (Ind), 910 S. Michigan Ave., Chicago

FATTY ACID ESTERS

Alrose Chemical Co., P. O. Box 1294, Providence, R. I.
 Archer-Daniels-Midland Co., Minneapolis 2
 Armour & Co., 1355 W. 31st St., Chicago
 Arnold, Hoffman & Co., Providence, R. I.
 Atlas Powder Co., Wilmington, Del.
 Carbide & Carbon Chems. Co., 30 E. 40th St., N. Y.
 Emery Industries, Carew Tower, Cincinnati 2
 El Dorado Oil Wks., 311 Cal. St., San Francisco 4 Calif.
 Emulsol Corp., 59 E. Madison St., Chicago 3
 General Mills, Chemical Div., Minneapolis 1
 Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y. 18

Griffin Chem. Co., 1000 16th St., San Francisco
 Heyden Chem. Corp., 393—7th Ave., N. Y. 1
 Kessler Chemical Co., Philadelphia 35
 Koppers Co., Pittsburgh 19
 National Southern Products, Tuscaloosa, Ala.
 Nopco Chem. Co., Harrison, N. J.
 Onyx Oil & Chem. Co., Warren & Norris Sts., Jersey City, N. J.
 Pennotex Oil Corp., 29 Broadway, N. Y. 6
 Swift & Co., Chicago
 Hans Tobearson, Inc., 33 Rector St., N. Y. 6
 Arthur C. Trask Co., 4103 S. La Salle St., Chicago 9
 Van Dyk & Co., Belleville 9, N. J.
 G. A. Wharry & Co., 95 Broad St., N. Y. 4
 Woburn Chemical Corp., Kearny, N. J.

FATTY ACID PLANTS (Engineering)

Blaw-Knox Co., Chicago
 William Garrigue & Co., 9 S. Clinton St., Chicago
 Alan Porter Lee Associates, 81 South St., Morristown, N. J.
 Project Construction Corp., 39 Broadway, N. Y. 6
 Wurster & Sanger, 5201 S. Kenwood Ave., Chicago

FATTY ACIDS

(see also Brokers and Dealers)

Archer-Daniels-Midland Co., Minneapolis 2
 Armour & Co., 1355 W. 31st St., Chicago
 Arnold Hoffman & Co., 55 Canal St., Providence, R. I.
 Atlas Powder Co., Wilmington, Del.
 John H. Calo Co., 19 Rector St., N. Y. 6
 Carbide & Carbon Chemicals Co., 30 E. 40th St., N. Y.
 Capital City Prods. Co., Columbus 16, O.
 Celina Stearic Acid Co., Celina, Ohio
 Concord Chem. Co., Moorestown, N. J.
 T. G. Cooper & Co., Cedar & Venango Sts., Phila.
 Darling & Co., 4201 So. Ashland Ave., Chicago



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NEO-FAT 7. Caprylic acid or its derivatives are used in the manufacture of disinfectants, anti-foaming agents, and as manufacturing intermediates in many synthetic organic compounds. The approximate composition of Neo-Fat 7 is 90% caprylic acid, 7% capric acid, and 3% caproic acid.

NEO-FAT 9. Like Neo-Fat 7, capric acid or its derivatives are used in the manufacture of disinfectants, anti-foaming agents, and as manufacturing intermediates in many synthetic organic compounds. Neo-Fat 9 contains approximately 90% capric acid, 7% lauric acid, and 3% caprylic acid.

NEO-FAT 11. An improved raw material for the synthesis of lauric acid derivatives, Neo-Fat 11 has many other uses. In the soap field, various derivatives of lauric acid are used as detergents, textiles, wetting agents, insecticides, and shampoos. Neo-Fat 11 consists of approximately 90% lauric acid, 9% myristic acid, a trace of capric acid and 1% unsaturated acids.

NEO-FAT 13. Myristic acid and its derivatives may be used in making detergents, wetting agents, shaving creams, shampoos, cosmetics, metallic soaps, textiles, and as intermediates in many synthetic organic compounds. The acid itself or its metallic soaps find application in rubber compounding, paints and grease compounding. Neo-Fat 13 is made up of the following approximate percentages of acids: myristic acid, 90%, lauric acid, 4%, palmitic acid, 4%, and unsaturated acids, 2%.

NEO-FAT COCONUT OIL FATTY ACIDS SPECIFICATIONS

	Iodine		Acid Value		Titer, °C.		Color, Lovibond 5 1/4"	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Neo-Fat 7 (caprylic acid)	—	2.0	385	394	—	16°	—	0.5R-5Y
Neo-Fat 9 (capric acid)	—	2.0	323	329	28°	33°	—	1.5R-10Y
Neo-Fat 11 (lauric acid)	—	2.0	276	282	36°	42°	—	1.0R-10Y
Neo-Fat 13 (myristic acid)	—	2.0	243	249	48°	52°	—	1.0R-10Y
Stripped Coco	8	16	250	260	24°	30°	—	2.5R-25Y

Tall Oil Fractions

NEO-FAT D-142. Neo-Fat D-142 is excellent for liquid and jelly soaps, particularly high class products such as cosmetic creams, hair shampoos, etc. Other important applications include flotation, drawing compounds, and other specialty products. Its average composition is 50% oleic acid, 40% linoleic acid, 4% linolenic acid and 6% rosin acid.

NEO-FAT S-142. Neo-Fat S-142 is particularly adaptable to the manufacture of soap of the jelly and liquid types. There are many other applications for Neo-Fat S-142, such as flotation, special polishes, oil emulsions, etc. In fact, wherever a low titer unsaturated fatty acid is required, Neo-Fat S-142 should be investigated. This versatile Neo-Fat contains 46% oleic acid, 39% linoleic, 3% linolenic, and 12% rosin acid.

NEO-FAT D-242. This fractionated tall oil rosin acid is especially suited to soap manufacture. Like rosin, it can be blended readily with other fats, oils, and fatty acids. Saponification is almost instantaneous. Neo-Fat D-242 is an efficient, economical swelling agent for rubber reclaiming. Other applications include core oils, linoleum, floor covering and greases. Typical composition is 70% rosin acids (as wood rosin), and 30% fatty acids. The mean molecular weight is 298.0, melting point 250.0° F. (for complete liquefaction), neutralization value 175.0, color (rosin scale) WG-N, and the odor, mild.

TALL OIL SPECIFICATIONS

	Mean Molecular Weight	Titer, °C.	Iodine Value (wijs)	Neutraliza- tion Value
Neo-Fat D-142	284.0	17.5°	130.0	197.0
Neo-Fat S-142	295.2	20.0°	130.0	190.0

Stripped Coconut Fatty Acid

This acid is ideally suited for applications where the "bite" of ordinary overall distilled coconut fatty acid is undesirable. The absence of the irritating lower molecular weight fatty acids makes Armour's stripped coconut fatty acid excellent material for soap products, particularly shampoos and liquid hand soaps which require smooth, bland characteristics. It is also well suited for paste soaps, fat liquors, softening agents or other applications where a double distilled coconut acid is ordinarily required. Average composition is lauric acid, 56.4%, myristic acid 20.6%, palmitic acid 10.6%, oleic 7.1%, linoleic 2.9%, and stearic 2.4%.

ARMOUR CHEMICAL DIVISION

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Emery Industries Inc., 4300 Carew Tower, Cincinnati
General Mills, Chemical Div., 400 2nd Ave., Minneapolis 1
A. Gross & Co., 295 Madison Ave., N. Y.
Otto A. C. Hagen Corp., 929 Public Ledger Bldg., Phila.
Hardesty & Co., 60 E. 42 St., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
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230 Park Ave., N. Y.
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Los Angeles Soap Co., Los Angeles, Calif.
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
National Southern Products, Tuscaloosa, Ala.
Newport Industries, 230 Park Ave., N. Y. 17
Pennotex Oil Corp., 29 Broadway, N. Y. 6
Procter & Gamble Co., Cincinnati, O.
Robinson Wagner Co., 110 E. 42nd St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
C. F. Simonin's Sons, Tioga & Belgrade St., Phila.
Southern Cotton Oil Co., Produce Exchange, N. Y.
Swift & Co., Union Stock Yards, Chicago
Theobald Industries, Kearny, N. J.
Hans Tobeaon, Inc., 33 Rector St., N. Y. 6
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Union Bag & Paper Corp., 233 Broadway, N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.
G. A. Wharry & Co., 95 Broad St., N. Y. 4
Wilson-Martin Co., Swanson St., Phila.
Woburn Chemical Corp., Harrison, N. J.

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American Alcolac Corp., 3440 Fairfield Rd., Baltimore
26
Antara Chemicals, Div. General Dyestuffs Corp. 435
Hudson St., N. Y.
Archer-Daniels-Midland Co., Minneapolis 2
Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
N. I. Malmstrom & Co., 147 Lombardy St., Bklyn, N. Y.
M. Michel & Co., 90 Broad St., N. Y.
Onyx Oil & Chem. Co., 190 Warren St., Jersey City, N. J.
F. Ritter & Co., 4641 Hollywood Ave., Los Angeles 27
Swift & Co., Chicago
Robinson Wagner Co., 110 E. 42nd St., N. Y.
Hans Tobeaon, Inc., 33 Rector St., N. Y. 6
Welch, Holme & Clarke Co., 439 West St., N. Y.
Woburn Chemical Corp., Harrison, N. J.

FATTY ALCOHOLS, Sulfonated (see Sulfonated Fatty Alcohols)

FELDSPAR (see Abrasives and Fillers)

FIBRE CANS (see Cans, Fibre)

FILLERS (see Abrasives and Fillers)

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Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
Exact Weight Scale Co., 944 W. 5th Ave., Columbus, O.
J. L. Ferguson Co., Joliet, Ill.
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Frazier & Son, Belleville, N. J.
B. F. Gump Co., 1338 S. Cicero Ave., Chicago
(Bbbs & Bags)
S. Howes Co., Silver Creek, N. Y. (Bbbs.)
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
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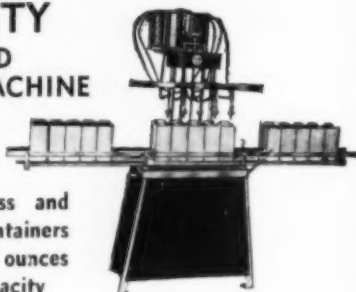
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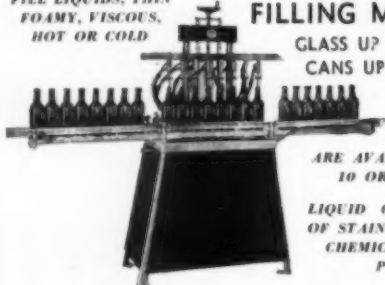


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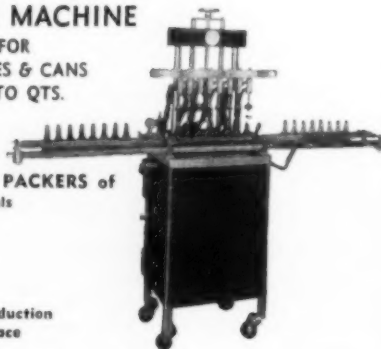
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Stokes & Smith Co., 4915 Summerdale Ave., Philadelphia
Stuyvesant Engineering Co., Lyndhurst, N. J.
Triangle Package Machine Co., 6643 W. Diversey Blvd.,
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Weigh Right Automatic Scale Co., Joliet, Ill.

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Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy, Corp., 157 Hudson St., N. Y. (Used)
Horix Mfg. Co., Pittsburgh
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
M. R. M. Co., 191 Berry St., Bklyn.
Mandel Products, 207 Astor St., Newark, N. J.
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Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
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Perl Mach. Mfg. Co., 72 Jay St., Brooklyn 1
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Chas. Ross & Son Co., 148 Classon Ave., Bklyn.
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F. J. Stokes Machine Co., 5918 Tabor Rd., Philadelphia
Triangle Package Machinery Co., 6643 W. Diversey Ave.,
Chicago 35
U. S. Bottlers Machinery Co., 4019 N. Rockwell St.,
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Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy, Corp., 157 Hudson St., N. Y. (Used)
Horix Mfg. Co., Pittsburgh 4
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., Cincinnati
M. R. M. Co., 191 Berry St., Bklyn.
Mandel Products, 207 Astor St., Newark, N. J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
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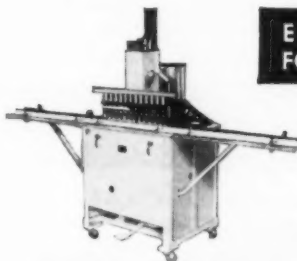
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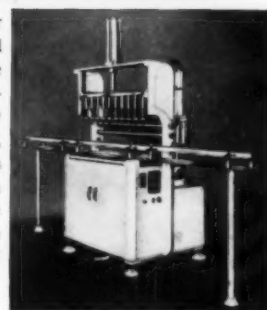


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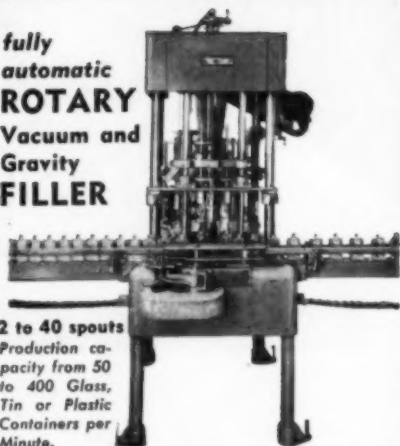
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 First Machy. Corp., 157 Hudson St., N. Y. (Used)
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 Sprout, Waldron & Co., Muncy, Pa.
 F. J. Stokes Mach. Co., 5918 Tabor Rd., Philadelphia
 Stokes & Smith Co., 4915 Summerdale Ave., Phila.
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 Triangle Package Machinery Co., 6643 W. Diversey Ave., Chicago
 Union Special Machine Co., Chicago
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 Vol-U-Meter Co., 707 Ohio St., Buffalo, N. Y.
 Weigh Right Automatic Scale Co., Joliet, Ill.

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Commercial Filters Corp., 92 Liberty St., N. Y.
Dicalite Div., 612 S. Flower St., Los Angeles
Filpaco Industries, 2464 S. Michigan Ave., Chicago
Filtrol Corp., 727 W. 7th St., Los Angeles
General Reduction Co., 1820 Roscoe St., Chicago
Industrial Chem. Sales Div., West Va. Pulp and Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Johns-Manville Corp., 22 East 40th St., New York
Peerless Clay & Mineral Co., Pueblo, Colo.
Satisfaction Supply Co., 508 W. Broadway, N. Y. 12
Scientific Filter Co., 59 Rose St., N. Y.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405 Lexington Ave., N. Y. 17
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.

FILTER CLAYS (see Clays; see Filter Aids.)

FILTER CLOTHS

Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Cleveland Wire Cloth & Mfg. Co., 3574 E. 78th St., Cleveland
Commercial Filters Corp., 92 Liberty St., N. Y. 6
Ertel Engineering Corp., 7 Front St., Kingston, N. Y.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
B. F. Gump Co., 1338 S. Cicero Ave., Chicago
Wm. E. Hooper & Sons, Juniper & Cherry Sts., Philadelphia
Hornney & Co., 420 Lexington Ave., N. Y.
Independent Filter Press Co., 189 Seventh St., Brooklyn
National Filter Cloth & Weaving Co., 220 E. 42nd St., N. Y.
Newark Wire Cloth Co., 223 Verona Ave., Newark, N. J.
Niagara Filter Corp., 3085 Main St., Buffalo, N. Y.
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
J. T. Perkins Co., 669 Kent Ave., Brooklyn
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
Satisfaction Supply Co., 508 W. Broadway, N. Y.
Scientific Filter Co., 59 Rose St., N. Y.
T. Shriver & Co., Harrison, N. J.
D. R. Sperry & Co., Batavia, Ill.
Test Fabrics, Inc., 224 W. 35th St., N. Y.
Valley Foundry & Mach. Works, 710 H. St., Fresno 10, Calif.

FILTER PAPER

Alsop Engineering Corp., 520 Green St., Milldale, Conn.
H. Reeve Angel & Co., 7 Spruce St., N. Y.
Commercial Filters Corp., 92 Liberty St., N. Y. 6
Ertel Engineering Corp., Kingston 6, N. Y.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
General Chemical Division, 40 Rector St., N. Y.
August Giese & Son, 121 E. 24th St., N. Y.
F. R. Hormann & Co., 186 Joralemon St., Brooklyn 2
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., Cincinnati, O.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y. 13
Niagara Filter Corp., 3085 Main St., Buffalo, N. Y.
Palo Co., 81 Reade St., N. Y.
Scientific Filter Co., 59 Rose St., N. Y.
T. Shriver & Co., Harrison, N. J.
Ungerer & Co., 161 Ave. of Americas, N. Y. 13
Valley Foundry & Machine Works, 710 H. St., Fresno 10, Calif.

FILTER PRESSES

Alsop Engineering Corp., 520 Green St., Milldale, Conn.
Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
Ertel Engineering Corp., Kingston 6, N. Y.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
F. R. Hormann & Co., 186 Joralemon St., Brooklyn 2
Hornney & Co., 420 Lexington Ave., N. Y.
Independent Filter Press Co., 189 Seventh St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Niagara Filter Corp., 3085 Main St., Buffalo, N. Y.

Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
Patterson Foundry & Machine Co., East Liverpool, Ohio
Scientific Filter Co., 59 Rose St., N. Y.
T. Shriver & Co., Harrison, N. J.
Sparkler Mfg. Co., 201 Lake St., Mundelein, Ill.
D. R. Sperry & Co., Batavia, Ill.
United Filters Corp., Hazelton, Pa.
Valley Foundry & Machine Works, 710 H St., Fresno 10, Calif.

FILTERS

Alsop Engineering Corp., 520 Green St., Milldale, Conn.
Belco Ind. Equipment Div., 51 Iowa Ave., Paterson, N. J.
Commercial Filters Corp., 92 Liberty St., N. Y. 6
Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
Cuno Engineering Co., Meriden, Conn.
Ertel Engineering Corp., Kingston 6, N. Y.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Foster Pump Wks., Inc., 54 Washington St., Brooklyn
Hercules Filter Corp., 204A 21st Ave., Paterson, N. J.
F. R. Hormann & Co., 186 Joralemon St., Brooklyn 2
Jacob House & Sons, 52 St. Paul St., Buffalo
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
Lancaster Iron Works, Lancaster, Pa.
Mixing Equipment Co., 167 Mt. Read Blvd., Rochester, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35 St., Chicago (Used)
Niagara Filter Corp., 3085 Main St., Buffalo, N. Y.
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
Permutit Co., 330 W. 42nd St., N. Y.
Pfahler Cleland Co., Galion, O.
Satisfaction Supply Co., 508 W. Broadway, N. Y. 12
Scientific Filter Co., 59 Rose St., N. Y.
T. Shriver & Co., Harrison, N. J.
Sparkler Mfg. Co., 201 Lake St., Mundelein, Ill.
U. S. Bottlers Machy. Co., 4019 N. Rockwell St., Chicago
U. S. Stoneware Co., 60 E. 42nd St., N. Y. 17
Whiting Corp., Harvey, Ill.

FIRE EXTINGUISHER FLUID

A-M-R Chemical Co., 985 E. 35th St., Brooklyn 18
Analab Labs., 285 Franklin St., Boston 10
Bilco Chemical Co., 607 DeGraw St., Brooklyn, N. Y.
Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Chemical Service Co. of Baltimore, Howard & West Sts., Balto. 30
Cole Laboratories, 23rd St. & 7th Ave., L. I. City, N. Y.
Connecticut Chem. Research Corp., Bridgeport 5, Conn.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Diamond Alkali Co., Cleveland 14
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good Co., Susquehanna Ave. & Martha St., Phila.
Harshaw Chemical Co., 1945 E. 97 St., Cleveland 6
R. M. Hollingshead Corp., Camden, N. J.
Michigan Chemical Corp., St. Louis, Mich.
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Prior Chem. Corp., 420 Lexington Ave., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Stepan Chem. Co., 1353 N. Branch St., Chicago 22
Thompson-Hayward Chem. Co., Kansas City 8, Mo.
Trio Chemical Wks., 341 Scholes St., Brooklyn 6
Uncle Sam Chem. Co., 575 W. 131st St., New York
Westvaco Chem. Div., Food Mach. & Chem. Corp., 405 Lexington Ave., N. Y.

FIRE-PROOFING COMPOUNDS

Alrose Chem. Co., Box 1294, Providence, R. I.
Analab Labs., 285 Franklin St., Boston 10
Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
Antara Chemicals, Div. General Dyestuff Corp., 435 Hudson St., N. Y. 14
Chem. Service Co., of Baltimore, Baltimore 30
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Croton Chem. Corp., 114 Liberty St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
Essential Chemicals Co., 2200 N. 32nd St., Milwaukee 8

FEDERAL FLOOR FINISHES

SEALERS, WAXES and MAINTENANCE MATERIALS

FLOOR FINISHES

No-Burn Gym Finish*—The outstanding original finish for gym floors. Will not rubber burn—withstands boiling water, resists alkalies, acids, heat and cold.

Dri-Fast Seal & Finish*—The ideal speed finish for wood, linoleum and concrete floors. NOT A LACQUER. Base tung oil and phenol resins. Dries quickly—pale and long wearing.

Terrazzo Finish*—Will not discolor or darken terrazzo. Dries quickly—can be buffed for beautiful lustre. Prevents dusting.

Flexi-Color Rubberized Color Coat*—For cement, concrete, wood, linoleum or metal. Tenaciously adheres to cement—stubbornly resists moisture.

Asphalt Tile Finish—Renews and refinishes asphalt, rubber linoleum and mastic floors. Seals and finishes new or old floors with one coat.

FLOOR SEALERS

Fed-Co*—Highest quality penetrating wood sealer. Exceptional hardness and wearing qualities—easily applied with mop or spray.

Penetroil*—Very pale in color. Approved by Maple Flooring Manufacturers Association. Properly fills the pores with a durable elastic film—water resistant.

Quick-Prime*—Fast drying oleo resinous type primer. Dries in less than two hours. Ideal for large industrial plants, mills, bakeries and schools where speed finishing is a must.

Terrazzo Sealer*—Water white—will not discolor terrazzo. Prevents dusting, chipping and disintegration. Resists water, soap, acid and alkali.

Mastic (Asphalt)* Tile Sealer*—Seals tile against dust, dirt, grease, etc. Dries in less than an hour—will not soften tile or run the colors. Beautifies and highlights original colors.

Ready Mixed Color Concentrates—Beauty and durability for cement, concrete, wood and metal. Applied with brush or lamb's wool applicator. Resists oils, gasoline, alcohol, mild acids and alkalies.

WAXES

Lightning Lustre—Self polishing. Wear and water resistant. High lustre. Pure Carnauba Wax-Base finish. High in solids, pale in color.

Sle-Tred*—Self polishing. Tested and approved by Underwriters' Laboratories, Inc., as an anti-slip material. Made with Carnauba Wax—high gloss.

Liquid Oil Base Wax—Buff and polishes beautifully—easily applied with a mop or applicator. Super quality.

* Listed and Approved by Underwriters Laboratories as an Anti-Slip Material.

*A Quality Product
for Every Surface*

Federal Laboratories are constantly developing new products and perfecting new methods for beautifying and preserving all floor surfaces. Write for more information and FREE testing samples of these quality products. Ask, too, about our two-color 8½" x 11" catalog sheets that are available now.

SPECIAL CLEANING, MAINTENANCE AND FINISHING MATERIALS . . .

Gym Finish Cleaner & Polish

No. 70 Restorer

Magic Floor Spray

No-Burn Varnish Remover

Strip-Fast Stripper

Triple Strength Varnish Remover

Lightning Lustre Wax Base Soap

G.F.B. No. 2

G.F.B. No. 3

One Hour Finish

Water White Wood & Linoleum Finish

Lacquer Thinner

Street, Highway & Garage Marking Enamel

Fed-Co Aluminum Finish

Sani-Surf Gloss White Enamel

Sani-Surf White Eggshell Enamel

Sani-Surf White Enamel Undercoater

Silax Paste Wood Filler

Base Stain Colors

Asphalt Tile Cleaner & Conditioner

Federal CPR Finish

Sila-Gloss

Sil-Lox

Flex-Cote



FEDERAL VARNISH DIVISION

DEPT. 150 — ASHLAND AVE. at 29th STREET

CHICAGO 8, ILL.

FIREPROOFING COMPOUNDS (Contd.)

Fuld Bros., 702 S. Wolfe St., Baltimore
Glyco Products Co., 26 Court St., Bklyn.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Johns Manville Co., 22 E. 40th St., N. Y.
Monsanto Chemical Co., 1724 South Second St., St. Louis
Niacet Chemicals Corp., Niagara Falls, N. Y.
Onyx Oil & Chemical Co., Warren & Morris Sts., Jersey City 2
Per-Mo Products Co., 1716 E. 36th St., Kansas City, Mo.
Price Fire & Water Proofing Co., Poughkeepsie, N. Y.
Protexol Corp., 32 Market St., Kenilworth, N. J.
Quaker Chem. Prods. Co., Conshohocken, Pa.
Victor Chemical Works, 141 West Jackson Bldg., Chicago

FISH OILS

(see also *Brokers and Dealers*)

Archer-Daniels-Midland Co., Minneapolis 2
Atlantic Products Corp., Commercial Trust Bldg., Phila.
Atlas Refinery, Lockwood St., Newark, N. J.
John H. Calo Co., 19 Rector St., N. Y. 6
Consumers Import Co., 350 Fifth Ave., N. Y.
Falk & Co., Pittsburgh
Greene Trading Co., 60 Wall St., N. Y. 5 (Agents for Foreign Sellers)
Hasselman, Seaman, de Ryss, Inc., 347 Madison Ave., N. Y. 17
Hooker Electrochemical Co., Niagara Falls, N. Y.
Murray Oil Products Co., 21 West St., N. Y.
Pacific Vegetable Oil Co., 62 Townsend St., San Francisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Swan Finch Oil Corp., 30 Rockefeller Plaza, N. Y.
Swift & Co., Chicago 9
Hans Tobeason, Inc., 33 Rector St., N. Y. 6
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
G. A. Wharry & Co., 95 Broad St., N. Y. 4

FISH OIL SOAPS

Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Crystal Soap & Chem. Co., 6300 State Rd., Phila.
Falk & Co., Pittsburgh 30, Pa.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
R. M. Hollingshead Corp., Camden, N. J.
Nopco Chem. Co., Harrison, N. J.
Newell Gutradt Co., 350 Fremont St., San Francisco
North Coast Chem. & Soap Works, Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Schaeffer Mfg. Co., 102 Barton St., St. Louis
Silmo Chemical Co., Vineland, N. J.
Thompson-Hayward Chem. Co., Kansas City, Mo.
Welch, Holme & Clark Co., 439 West St., N. Y.

FLOATING SOAPS

Armour & Co., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
J. Eavenson & Sons, Camden, N. J.
Haskins Bros. & Co., Omaha
Hewitt Soap Co., Dayton, Ohio
Iowa Soap Co., Burlington, Iowa
Lightfoot Schultz Co., 663 Fifth Ave., N. Y.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

FLOOR FINISHES (Non-Wax)

Alexander Chem. Co., 511 Willoughby Ave., Bklyn. 6
Ampion Corp., 4-88—47th Ave., Long Island City, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston

Do you sell to SANITARY SUPPLY HOUSES?

If part of your market is among sanitary supply jobbers—firms supplying buildings, institutions, clubs, hotels, laundries, industrial organizations, etc.,—then you can advertise in *Soap & Sanitary Chemicals* to considerable advantage. If you specialize in selling bulk or private brand soaps of any kind, disinfectants, insecticides, polishes, floor products, moth preventives, deodorants, etc., then *Soap & Sanitary Chemicals* is your advertising medium. Base soaps and other partly finished products can also be sold through this publication as well as all types of sanitary accessories—mops, brushes, metal receptacles, floor scrapers, mopping tanks, etc. Ask for an advertising rate card and the latest circulation data.

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AN AMAZING NEW SELF-EMPTYING
VACUUM CLEANER!

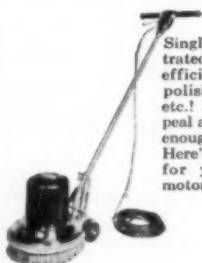


THE REX PLUTO

(Patents Applied For)

**It Sucks! It
Ejects! It Blows!**
A new industrial
vacuum cleaner
for wet and dry
pick-up, that
empties itself
without removing
the lid! Light in
weight, easy
to demonstrate!
Equally effective
for sucking or
blowing!

A SENSATIONAL NEW 12" FLOOR MACHINE



Single brush, concentrated weight! A highly efficient machine for polishing, scrubbing, etc.! Lots of sales appeal and at a price low enough for a big seller! Here's really new profit for you! Standard motor for AC only.

REX "KEEN'S CYCLONE" BLOWER



Powerful, efficient, practical...packed with features that sell themselves! See it... compare it... learn why it's so easy to sell!

REX "Stocky" FLOOR MACHINE



3 Sizes—14"—16"—
19"

Polishes... Buffs...
Scrubs...
Wire-Brushes...
Sands... Grinds!

FLOOR TREATMENTS

RexGlo-X (floor wax) Rex Penetrating Seal
RexGlo Concentrate Rex Terrazzo Seal
Rex Gym Seal Rex Rubber Resin Enamel
Rex Safety Surface Coat

REX PORTABLE VACUUM CLEANER

56" Water
Lift



Removes
More
Dirt Per
Minute!

Wet
"Pick-Up"
Dry
"Pick-Up"

CLEANERS

Rex Clonsax Rex Lather (for rugs)
Rex Super-Clonsax Rex Rug Shampoo
Rex Cleaner Rex Wall Cleaner (powder)

REX CLEANWALL WALL- WASHING MACHINE



Gives
Cleaner
Walls
Quicker,
Easier
at
Lower
Cost!

SANITIZERS

Rex Ais-O-Cide Rex Theatre Spray
Rex Bux-to-Kill Rex Pine-O-Cide
Rex Bux To Solve Rex Rouch-O-Cide

REX-CLEANWALL CORPORATION

238 S. MURPHY AVE., BRAZIL, INDIANA, and 6630 S. MCKINLEY AVE., LOS ANGELES 1, CALIFORNIA

FLOOR FINISHES (Contd.)

Buckingham Wax Co., 51-03 Van Dam St., L. I. City, N. Y.
 Candy & Co., 2515 W. 35th St., Chicago
 Chemical Compounding Corp., 262 Huron St., Bklyn.
 Chemical Mfg. & Dist. Co., Easton, Pa.
 Chem. Service Co. of Balto., Howard & West Sts., Balto.
 Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
 Churchill Mfg. Co., Galesburg, Ill.
 Clifton Chemical Co., 62 William St., N. Y.
 Continental Car-Na-Var Corp., Brazil, Ind.
 Davies-Young Soap Co., Dayton, O.
 Eagle Soap Corp., Huntington, Ind.
 Empire Chemical Prods. Co., 10 Longworth St., Newark
 Essential Chems. Co., 3200 W. 32nd St., Milwaukee 8
 Federal Varnish Division, S. Ashland Ave. at 29th St., Chicago
 Franklin Research Co., 5134 Lancaster Ave., Phila.
 Fuld Bros., 702 S. Wolfe St., Baltimore
 P. D. George Co., 5200 N. 2nd St., St. Louis
 James Good Co., Susquehanna Ave., Phila. 25
 Higley Chemical Co., Dubuque, Iowa
 R. M. Hollingshead Corp., Camden, N. J.
 Hysan Prods. Co., 932 W. 38th Place, Chicago
 S. C. Johnson & Son, 1525 Howe St., Racine, Wisc.
 Masury Young Co., 76 Roland St., Boston 29
 Midland Labs., Dubuque, Iowa
 Peck's Products Co., 610 E. Clarence Ave., St. Louis
 Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Science Industries, 609-15 Geyer Ave., St. Louis
 Shawmut Specialty Co., 313 Centre St., Boston
 E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
 L. Sonneborn Sons, Inc., 400 4th Ave., N. Y. 10
 S. S. Stafford, Inc., 603 Washington St., N. Y.
 Standard Oil Co. (Calif.), 225 Bush St., San Francisco
 Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
 Trio Chemical Wks., 341 Scholes St., Bklyn. 6
 Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
 U. S. Sanitary Spec. Corp., 1001 S. California Ave., Chicago 12
 Vestal, Inc., 4963 Manchester St., St. Louis 10
 Victory Chem. Co., 148 Fairmount Ave., Phila.
 T. F. Washburn Co., 2244 Elston Ave., Chicago
 Windsor Wax Co., 611 Newark St., Hoboken, N. J.
 G. H. Wood & Co., Toronto, Canada
 Woodlets, Inc., Portland, Pa.

FLOOR MACHINES

Adams Prods., Inc., 248 W. Fairfield Ave., St. Paul
 Amer. Floor Surfacing Mach. Co., Toledo, O.
 Atlas Floor Surfacing Mach. Corp., 248 E. 34th St., N. Y.
 Breuer Elect. Mfg. Co., 5100 N. Ravenswood Ave., Chicago 40
 Clarke Sanding Machine Co., Muskegon, Mich.
 Columbus-Dixon, Inc., 333 E. 23rd St., N. Y.
 Finnell System, Inc., Elkhart, Ind.
 General Floorcraft Corp., 333 Sixth Ave., N. Y.
 Hild Floor Machine Co., 740 W. Washington St., Chicago
 Kent Co., 306 Canal St., Rome, N. Y.
 S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
 Lincoln-Schlueter Floor Machy. Co., 1250 W. Van Buren St., Chicago
 Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
 Ponsell Floor Machine Co., 220 W. 19th St., N. Y.
 Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
 United Floor Machine Co., 7600 S. Greenwood Ave., Chicago
 G. H. Wood & Co., P.O. Box 34, Toronto, Ont., Canada

FLOOR SCRAPERS and SANDERS

American Floor Surfacing Machine Co., Toledo, O.
 Atlas Floor Surfacing Mach. Corp., 248 E. 34th St., N. Y.
 Clarke Sanding Machine Co., Muskegon, Mich.
 A. F. Dormeyer Mfg. Co., 4316 N. Kilpat'k St., Chicago
 Greenview Mfg. Co., 2557 Greenview Ave., Chicago
 Lincoln-Schlueter Floor Machy. Co.,
 512 S. Peoria Ave., Chicago
 Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
 White Mop Wringer Co., Fultonville, N. Y.

FLOOR SCRUB SOAPS (see also Potash Soaps)

American Soap & Washoline Co., Cohoes, N. Y.
 Ampion Corp., 47-02—5th St., Long Island City, N. Y.
 Analab Labs., 285 Franklin St., Boston 10
 Armour & Co., 1355 W. 31st St., Chicago
 Banner Chem. Prods. Co., 60 Elm St., Newark, N. J.
 Baum's Castorine Co., Rome, N. Y.
 Bilco Chemical Co., 607 DeGraw St., Brooklyn, N. Y.
 Boston Chemical Industries, 64 E. Brookline St., Boston
 Brilco Labs., 1553 63rd St., Bklyn. 19
 Buckingham Wax Co., 51-03 Van Dam St., L. I. City, N. Y.
 Candy & Co., 2515 W. 35th St., Chicago
 Chemical Compounding Corp., 262 Huron St., Brooklyn
 Chemical Mfg. & Dist. Co., Easton, Pa.
 Chem. Service Co. of Balto., Howard & West Sts., Balto.
 Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
 Clifton Chemical Co., 62 William St., N. Y.
 Churchill Mfg. Co., Galesburg, Ill.
 Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
 Copeland Laboratories, 774 College St., Toronto, Can.
 Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
 Davies-Young Soap Co., Dayton, O.
 E. F. Drew & Co., 15 E. 26th St., N. Y. 10
 Eagle Soap Corp., Huntington, Ind.
 Empire Chem. Prods. Co., 12 Longworth Ave., Newark, N. J.
 Essential Chemicals Co., 2200 N. 32nd St., Milwaukee 8
 Franklin Research Co., 5134 Lancaster Ave., Phila.
 Fuld Bros., 702 S. Wolfe St., Baltimore
 Gaylord Chem. Co., 701 Woodswearther Rd., Kansas City 6, Mo.
 James Good, Inc., 2116 Susquehanna Ave., Phila.
 Haag Laboratories, Inc., 140th and Seeley Ave., Blue Island, Ill.
 Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
 Hewitt Soap Co., Dayton, O.
 Higley Chemical Co., Dubuque, Iowa
 R. M. Hollingshead Corp., Camden, N. J.
 Hygiene Products, 169 St. Cyr, Montreal, Can.
 Hysan Prods. Co., 932 W. 38th Place, Chicago
 Knox-All Corp., 1005 E. Sumner Ave., Indianapolis
 Kranich Soap Co., 60 Richards St., Brooklyn
 H. Krevit Co., 73 Walton St., New Haven, Conn.
 Los Angeles Soap Co., 617 E. 1st St., Los Angeles
 M. & H. Laboratories, 2705 Archer Ave., Chicago
 Masury Young Co., 76 Roland St., Boston 29
 Midland Labs., Dubuque, Iowa
 Murro Chemical Co., P. O. Box 185, Asheville, N. C.
 Mutual Chem. & Supply Co., Columbus, Ohio
 Nopco Chem. Co., Harrison, N. J.
 N. Y. Soap Co., 258 Third St., Brooklyn
 Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
 Oil Specialties & Ref. Co., 18 Bridge St., Bklyn.
 Piatt & Smillie Chemicals, 2329 Pine St., St. Louis 3
 Procter & Gamble Co., Cincinnati
 Puritan Chem. Co., Atlanta, Ga.
 Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
 Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
 Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
 Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
 Savin Products Co., 1221 Dorchester Ave., Boston 25
 Schaeffer Mfg. Co., 102 Barton St., St. Louis
 I. Schneid, Inc., 916 Ashby St., N.W., Atlanta, Ga.
 Science Industries, 609-15 Geyer Ave., St. Louis
 Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
 E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
 S. S. Stafford, Inc., 603 Washington St., N. Y.
 John T. Stanley Co., 642 W. 30th St., N. Y.
 Superior Soap Corp., 121 Nostrand Ave., Brooklyn
 Swift & Co., Chicago
 Tech. Soap Mfg. Co., S. Chicago Ave. & 73rd St., Chicago
 Thompson-Hayward Chem. Co., Kansas City, Mo.
 Trio Chemical Wks., 341 Scholes St., Bklyn. 6
 Tru-Pine Co., 7638 Vincennes Ave., Chicago 20
 Twi-Laq Chemical Co., 25 N. Portland Ave., Bklyn.
 Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
 Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
 U. S. Sanitary Spec. Corp., 1001 S. California Ave., Chicago 12
 James Varley & Sons, 1200 Switzer Ave., St. Louis
 Vestal, Inc., 4963 Manchester St., St. Louis 10
 T. F. Washburn Co., 2244 Elston Ave., Chicago
 Windsor Wax Co., 611 Newark St., Hoboken, N. J.

A GUIDE

TO WAX PRODUCTS PURCHASING

FOR PRIVATE BRAND RESALE



SELF POLISHING WAXES

Candy's Supreme (standard)
Candy's DeLux
Bright Beauty (standard)
Candy's No. 640
Candy's Supreme Special WR
CAND-DOX #CS
CAND-DOX #BB

Seven floor waxes that are all-around top quality for any given traffic condition. Each imparts the finest protection and beauty to floors for which they are best suited.

Bright Beauty FLOOR CLEANER

An outstanding material for removing even the heaviest wax film and dirt... Brings neglected floors "back to normal." The right cleaning agent to insure the most efficient floor maintenance.

Bright Beauty CREAM FURNITURE POLISH

A cream furniture polish that spreads easily, polishes without excessive effort and imparts a deep impressive lustre. Too, it permits repeated repolishing with a dry cloth saving reapplication time and again; truly a very economical polish of very highest quality.

Bright Beauty PASTE WAX

A paste wax that is properly blended and refined from excellent quality solids and solvents that produce the best drying time and thorough evaporation. A wax that is easy to handle, having "creamy" consistency and stability throughout its stocking and usage period.

Bright Beauty LIQUID (spirit) PREPARED WAXES

Complete line of spirit dissolved waxes that meet a wide variety of demands for durability, color and types of usages. Each its own "Dry Cleaner," they keep a surface waxed with a superb protective coating necessary to many difficult surfaces such as certain floors (where adaptable), bars, wallpaper, etc.

Bright Beauty GLASS POLISH & CLEANER and SILVER POLISH

As a Glass Cleaner (pink color) it applies evenly with little effort, wipes off easily with negligible "powdering" and produces an undeniable "feel" of cleanliness to glass that is actually true in fact. Different in color only as Silver polish, it imparts a highly desirable lustre to all silver without abrasion and can even correct the abuses of scratchy, "quick-polish" inferior products.

Bright Beauty DANCE FLOOR WAX

Basic advantages are freedom from "balling up," thus does not gather dirt and impregnate the floor with hard spots difficult to remove...also is free from dusty effects. Adds the protective quality to expensive ballroom floors that means more "floor-years" to users everywhere.

Bright Beauty Heavy Duty PASTE CLEANER

Really cleans and scours more effectively and quicker than most scouring powders. Depending on application, it can clean to perfection even painted walls to provide a suitable repainting surface. 100% active, free from excessive abrasive quality, it frees almost every surface from all forms of foreign matter to perfection.

An honest appraisal of floor wax products as we see it is offered to guide wax buyers who want the best quality money can buy...

1. BEAUTY AND DURABILITY

should be considered together. Initial appearance is important, but for a waxed surface to remain beautiful it must be durable. Durability depends not only on resistance to the abrasion of traffic, but even more so on resistance to the collection of dirt and to discoloring traffic marks. Durability is really measured by how long the waxed surface maintains a nice appearance before the necessity of complete removal and re-waxing.

2. ANTI SLIP

qualities are necessary in a good wax as a matter of safety underfoot. This important quality does not necessarily require the sacrifice of beauty and protection which are the foremost original reasons for the use of a wax. Look for the proper balance—a wax film which is not excessively slippery yet which is not tacky and does not excessively collect dirt.

3. WATER RESISTANCE

is important, particularly when considering the possibility of wet traffic and the necessity for frequent damp mopping for the purpose of removing surface dirt. Overdoing this quality means greater difficulty in applying multiple coats of wax and may seriously increase the difficulty in removal when complete cleaning and re-waxing is necessary. Water resistance is important, but so is the quality of removability.

4. SOLID CONTENT

when expressed in percentage is not nearly as important as the quality of the solid content. When considering good quality, 12% of solids answers most needs for good planned maintenance programs. Two applications of 12% will give better results than one of 18%. However, the more concentrated material is useful for some programs of maintenance and particularly on "washed-out" floors, etc. Over-waxing should be avoided so that periodic complete removal will not be too difficult.

5. CARNAUBA WAX

is still the most important basic ingredient in our floor waxes. When refined and compounded with other important ingredients and "KNOW HOW," it aids materially in producing the most important features of a good floor wax...ALL AROUND QUALITY OF PERFORMANCE.

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Woodlets, Inc., Portland, Pa.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Wyandotte Chemicals Corp., J. B. Ford Div., Wyandotte, Mich.

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FLOOR WAX APPLICATORS (see Applicators)

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Ampion Corp., 47-02—5th St., Long Island City, N. Y.
Analab Labs., 285 Franklin St., Boston 10
Antiseptol Co., 5524 Northwest Highway, Chicago
Banner Chemical Products Co., 60 Elm St., Newark, N. J.
Boston Chemical Industries, 64 E. Brookline St., Boston
Buckingham Wax Corp., Van Dam St. & Borden Ave., L. I. City, N. Y.
Candy & Co., 2515 W. 35th St., Chicago
Cary Mfg. Co., 4849 Mansfield St., San Diego 16, Calif.
Chemical Service Co., Baltimore
Chemical Mfg. & Dist. Co., Easton, Pa.
Chicago Sanitary Prods. Co., 3100 Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Columbus-Dixon, Inc., 333 E. 23rd St., N. Y. 10
Copeland Laboratories, 774 College St., Toronto, Can.
Crystal Soap & Chemical Co., 6300 State Rd., Phila.
Davies-Young Soap Co., Dayton, O.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
Empire Chemical Prods. Co., 10 Longworth St., Newark, N. J.
Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
Federal Varnish Division, S. Ashland Ave. at 29th St., Chicago
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City 6, Mo.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Higley Chemical Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hygiene Products, 169 St. Cyr, Montreal, Can.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Industrial Materials Co., 1017 McCall St., Houston, Tex.
S. C. Johnson & Son, 1525 Howe St., Racine, Wisc.
Knox-All Corp., 1005 E. Sumner Ave., Indianapolis
H. Krevit & Co., 73 Welton St., New Haven, Conn.
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M. & H. Laboratories, 2703 Archer Ave., Chicago
Masury Young Co., 76 Roland St., Boston 29
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Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
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Puritan Chem. Co., Atlanta, Ga.
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Schaeffer Mfg. Co., 102 Barton St., St. Louis
I. Schneid, Inc., 916 Ashby St., Atlanta, Ga.
Science Industries, 609-15 Geyer Ave., St. Louis
Shawmut Specialty Co., 313 Centre St., Boston
Slick-Shine Co., 207 Astor St., Newark, N. J.
E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
S. S. Stafford, Ind., 603 Washington St., N. Y.
John C. Stalfort & Sons, 319 W. Pratt St., Baltimore
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Veneer-O-Wax Corp., 17 York St., Camden, N. J.
Vestal, Inc., 4963 Manchester St., St. Louis 10
Victory Chem. Co., 148 Fairmount Ave., Phila.
T. F. Washburn Co., 2244 Elston Ave., Chicago
Wilco Co., 4425 Bandinni Blvd., Los Angeles
Windsor Wax Co., Inc., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Canada
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Wyandotte Chemicals Corp., J. B. Ford Div., Wyandotte, Mich.

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American Fluoride Corp., 151 W. 19th St., N. Y.
Blockson Chemical Co., Joliet, Ill.
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Foote Mineral Co., 1609 Summer St., Philadelphia
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
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Koppers Co., Koppers Bldg., Pittsburgh
Lindsay Light & Chem. Co., West Chicago, Ill.
Merck & Co., Rahway, N. J.
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Commercial Solvents Corp., 17 E. 42nd St., N. Y. 17
E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97 St., Cleveland 6
Heyden Chem. Co., 393 7th Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Kay-Fries Chemicals, 180 Madison Ave., N. Y. 16
Mallinckrodt Chemical Work, St. Louis, Mo.
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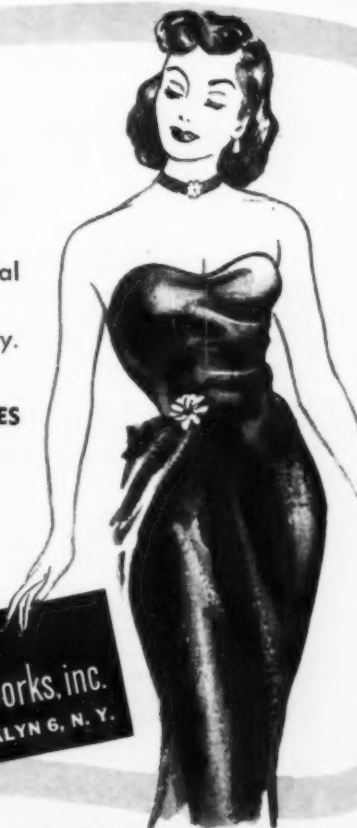
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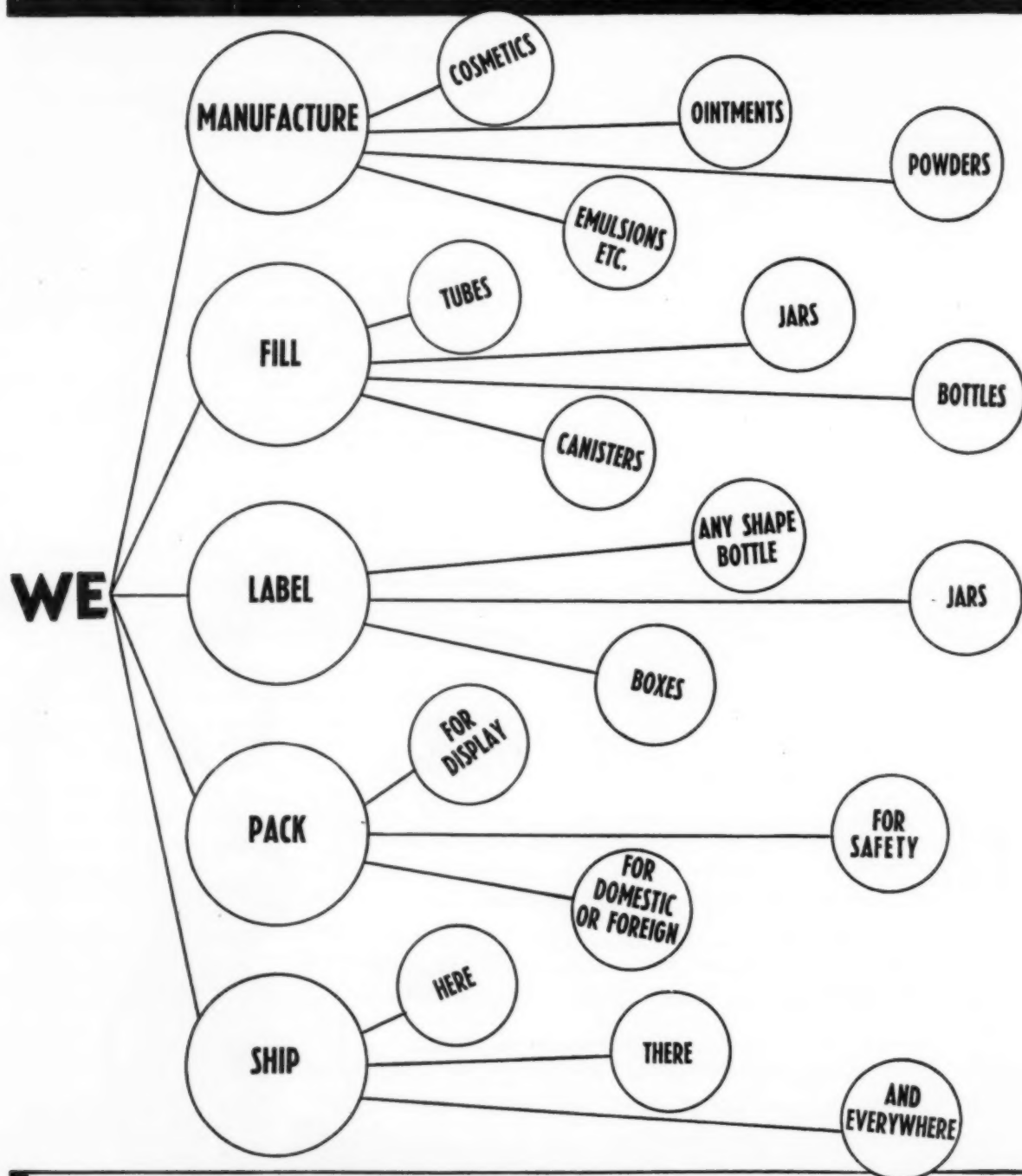
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Rosenthal Bercow, 25 E. 26th St., N. Y. 10
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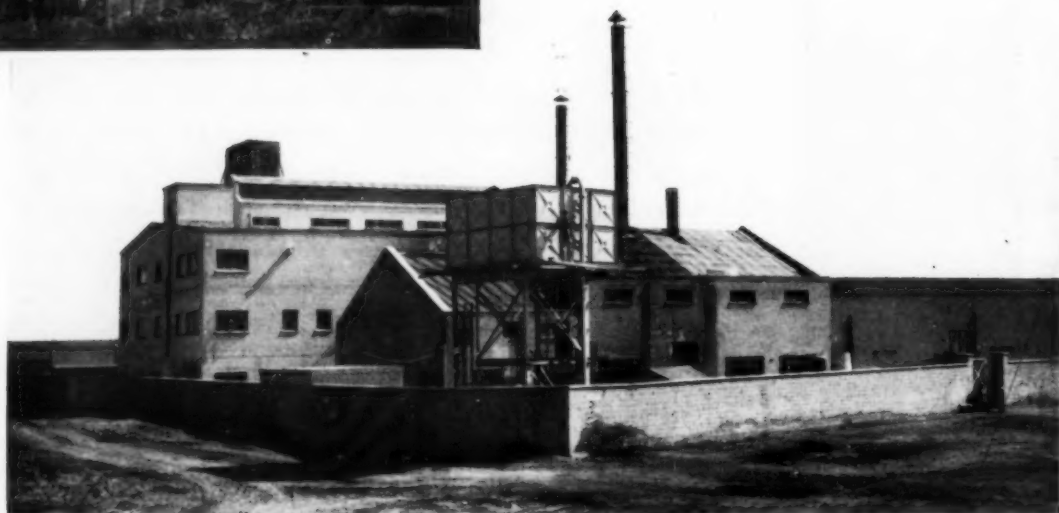
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Wyandotte Chemicals Corp., J. B. Ford Div., Wyandotte,
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Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Service Co. of Baltimore, Howard & West Sts.,
Balt. 30
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Copeland Laboratories, 774 College St., Toronto, Can.
Fuld Bros., 702 S. Wolfe St., Baltimore
Hysan Products Co., 932 W. 38th Place, Chicago
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Fuld Bros., Baltimore, Md.
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Murro Chem. Co., Asheville, N. C.
Hysan Prods. Co., 932 W. 38th Pl., Chicago
Oil-Dri Corp., 520 N. Michigan Ave., Chicago 11
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.

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GREASES (See Tallow)

GREASES, LUBRICATING (see Petroleum Bases)

GREEN SOAP (see Potash Soap)

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Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Gruendler Patent Crusher & Pulverizer Co., 900 N. First St., St. Louis
B. F. Gump Co., 1338 S. Cicero Ave., Chicago
Houchin Machy. Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
International Engineering, 1145 Bolander Ave., Dayton, Ohio
Kent Machine Works, 39 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., 566 New York Ave., Lyndhurst, N. J.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
Olsen & Tilgner Mfg. Co., 2276 Elston Ave., Chicago
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
A. E. Poulsen & Co., 2025 San Fernando Rd., Los Angeles, Cal.
Pulverizing Machinery Co., Chatham Rd., Summit, N. J.
Raymond Pulverizer Div., 1314 N. Branch St., Chicago 22
Chas. Ross & Sons, 150 Classon Ave., Brooklyn
Sprout Waldron & Co., Muncy, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Machine Co., Philadelphia, Pa.
Sturtevant Mill Co., Dorchester, Boston 22
Troy Engine & Mach. Co., Troy, Pa.
U. S. Stoneware Co., 60 E. 42nd St., N. Y. 17
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Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
Dodge & Olcott, Inc., 180 Varick St., N. Y.
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J. L. Hopkins & Co., 477 Keap St., Brooklyn, N. Y.
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Innis, Speiden & Co., 117 Liberty St., N. Y.
George H. Lincks, 312 Bridge St., Brooklyn 1
Magnus, Mabey & Reynard, 16 Desbrosses St., N. Y. 13
National Starch Products, Inc., 270 Madison Ave., N. Y.
Onyx Oil & Chem. Co., Warren & Norris Sts., Jersey City 2, N. J.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
J. H. Redding, Inc., 17 Battery Place, N. Y.
R. F. Revson Co., 144 W. 18th St., N. Y.

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 Thurston & Braidich, 286 Spring St., N. Y.
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 Welch, Holme & Clark Co., 439 West St., N. Y.
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 O. G. Innes Corp., 82 Wall St., N. Y.
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 U. S. Industrial Chemicals, Inc., Lincoln Bldg., N. Y.

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 Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
 Fuld Bros., 702 S. Wolfe St., Baltimore 3
 R. M. Hollingshead Corp., Camden, N. J.
 Hygiene Products, 169 St. Cyr, Montreal, Can.
 Hysan Prods. Co., 923 W. 38th Pl., Chicago
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 Onyx Oil & Chem. Co., Warren & Morris Sts., Jersey City 2
 J. C. Paul & Co., 8140 N. Ridgeway Ave., Skokie, Ill.
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 Science Industries, 609-15 Geyer Ave., St. Louis
 E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
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 Superior Chem. Prods., 47 N. Second St., Phila. 6
 Tech Soap Mfg Co., 7310 S. Chicago Ave., Chicago
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 Armour & Co., 1355 W. 31st St., Chicago
 Bilco Chemical Co., 607 DeGraw St., Bklyn.
 Boston Chemical Industries, 64 E. Brookline St., Boston 18
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 Chem. Service Co. of Balto., Howard & West Sts., Balto.
 Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
 Churchill Mfg. Co., Galesburg, Ill.
 Clarkon Laboratories, 919 N. 9 St., Phila. 23
 Colgate-Palmolive-Peet Co., Jersey City, N. J.
 Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
 Cudahy Packing Co., 221 N. La Salle St., Chicago
 Davies Young Soap Co., Dayton, O.
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 Essential Chemicals Co., 2200 N. 32nd St., Milwaukee 8
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 Gaylord Chem. Co., 101 Woodsweather Rd., Kansas City
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 Hygiene Products, 169 St. Cyr, Montreal, Can.
 Hysan Prods. Co., 932 W. 38th Place, Chicago
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 Kearny Mfg. Co., Kearny, N. J.
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 Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
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 Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
 Schmidt Soap Products Co., 236 W. North Ave., Chicago
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 Boston Chemical Industries, 64 E. Brookline St., Boston
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 Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
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 Clifton Chemical Co., 62 William St., N. Y.
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 Essential Chemicals, 2200 N. 32nd St., Milwaukee 8
 Fuld Bros. 702 S. Wolfe St., Baltimore
 Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City
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 Insto Co., 110 Center St., Los Angeles
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 M. & H. Laboratories, 2705 Archer Ave., Chicago
 Mione Mfg. Co., Collingdale, Penna.
 Murro Chemical Co., P. O. Box 185, Asheville, N. C.
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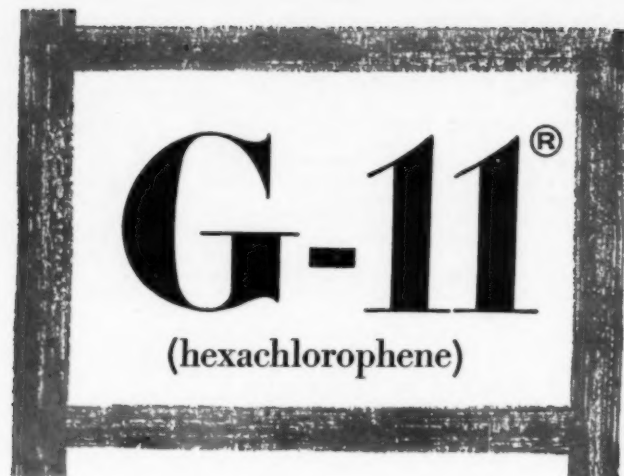
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J. W. Quinn Drug Co., Greenwood, Miss.
Rex Research Corp., Toledo
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., 333 Hollenbeck St., Rochester, 5, N. Y.
Schaeffer Mfg. Co., 102 Barton St., St. Louis, Mo.
I. Schneid, Inc., 916 Ashby St., Atlanta, Ga.
Science Industries, 609-15 Geyer Ave., St. Louis.
Sinclair Refining Co., 630 - 5th Ave., N. Y.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
S. S. Stafford, Inc., 603 Washington St., N. Y.
Standard Oil Co., of Calif., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio) Midland Bldg., Cleveland
Tech Soap Mfg. Co., S. Chicago Ave. & 73rd St., Chicago
Thompson-Hayward, 2915 S. W. Blvd., Kansas City
Trio Chem. Wks., 341 Scholes St., Bklyn.
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Industrial Chems., Inc., 60 E. 42nd St., N. Y.
U. S. Sanitary Specialties Corp., 1001 S. California Ave., Chicago 12
James Varley & Sons, 1200 Switzer Ave., St. Louis
Victory Chem. Co., 148 Fairmount Ave., Philadelphia
Virginia-Carolina Chem. Corp., Richmond, Va.
Vliet & Co., 638 Monroe St., Brooklyn
Robert C. White Co., Chestnut Hill, Phila.
Wilco Co., 4425 Bandinni Blvd., Los Angeles
Whitmire Research Labs., 339 S. Vandeventer, St. Louis
Windsor Wax Co., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Ont., Canada
Woodlets, Inc., Portland, Pa.
York Chemical Co., 23 Dean St., Bklyn.

HOUSEHOLD INSECTICIDES PASTE (see Phosphorus Paste, Roach Paste)

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A-M-R Chem. Co., 985 E. 35th St., Bklyn. 18
Boston Chemical Industries, 64 E. Brookline St., Boston
Bilco Labs., 1553-63rd St., Bklyn. 19
California Spray-Chemical Corp., Richmond, Calif.
Chase Prods. Co., 1816 St. Charles Rd., Maywood, Ill.
Chem. Mfg. & Dist. Co., Easton, Pa.
Chemical Service Co., Baltimore 30, Md.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 62 William St., N. Y.
Cole Labs., 22-19 37th Ave., L. I. City, N. Y.
Cornell Chem. & Equipment Co., Dillon Hgts. Ave., Balto.
Crystal Soap & Chem. Co., 6300 State Rd., Phila.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Co., 323 W. 16th St., N. Y.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Heckathorn & Co., Richmond, Calif.
Higley Chemical Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hygiene Products, 169 St. Cyr, Montreal, Can.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Koppers Co., Koppers Bldg., Pittsburgh
McCormick & Co., Inc., Baltimore, Md.
Michigan Chem. Corp., St. Louis, Mich.
Midland Labs., Dubuque, Ia.
Miller Prods. Co., 1932 S.W. Water Ave., Portland, Ore.
Edgar A. Murray Co., 2703 Guoin St., Detroit
Mutual Chem. & Supply Co., Columbus, Ohio
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Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
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Tru-Pine Co., 7638 Vincennes Ave., Chicago 20
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Whitmire Res. Labs., 339 S. Vandeventer, St. Louis
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Woodlets, Inc., Portland, Pa.
York Chemical Co., 23 Dean St., Bklyn.

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Archer-Daniels-Midland Co., Minneapolis 2
John H. Calo Co., 19 Rector St., N. Y. 6
Concord Chem. Co., Moorestown, N. J.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, 4300 Carew Tower, Cincinnati
A. Gross & Co., 295 Madison Ave., N. Y. 17
W. C. Hardesty Co., Inc., 41 E. 42nd St., N. Y.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Spencer Kellogg & Sons, Buffalo, N. Y.
Procter & Gamble Co., Cincinnati, O.
Swift & Co., Chicago 9
Welch, Holme & Clark Co., 439 West St., N. Y.
Wesson Oil & Snowdrift Co., 21 West St., N. Y.
Wyandotte Chemicals Co., J. B. Ford Div., Wyandotte, Mich.

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Innis, Speiden & Co., 117 Liberty St., N. Y.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Royce Chem. Co., Carlton Hill, N. J.
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HYDROXYCITRONELLAL (see Aromatic Chemicals)

HYPOCHLORITES (see Chlorine) (see Laundry Bleach)

INFUSORIAL EARTH (see Abrasives)

INSECT POWDER (see Pyrethrum)

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Analab Laboratories, 285 Franklin Rd., Boston 10
Bilco Chemical Co., 607 DeGraw St., Bklyn.
California Spray-Chemical Corp., Richmond, Calif.
Chase Prods. Co., 1816 St. Charles Rd., Maywood, Ill.
Carbide & Carbon Chems., 30 E. 42nd St., N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Phila.
Dow Chemical Co., Midland, Mich.
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore
Gunning & Gunning, Inc., 601 W. 26th St., N. Y. 1
Heckathorn & Co., Richmond, Calif.
Hercules Powder So., Wilmington 99, Dela.
Hygiene Products, 169 St. Cyr, Montreal, Can.
Innis, Speiden & Co., 117 Liberty St., N. Y. 6
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Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Whitmire Res. Labs., 339 Vandeventer, St. Louis
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California Spray-Chemical Corp., Richmond, Calif.
Chipman Chem. Co., Bound Brook, N. J.
Chem. Corp. of Colorado, 12th & Quiras, Denver
Commercial Solvents Corp., 17 E. 42nd St., N. Y. 17
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eston Chems., Inc., 3100 E. 26th St., Los Angeles
Fairfield Labs., 417 Cleveland Ave., Plainfield, N. J.
General Chem. Div., Allied Chemical & Dye Corp., 40
Rector St., N. Y. 6
Geigy & Co., 89 Barclay St., N. Y.
Heckathorn & Co., Richmond, Calif.
Hercules Powder Co., Wilmington, Del.
Julius Hyman & Co., Denver, Colo.
Kay-Fries Chemicals, 180 Madison Ave., N. Y. 16
Kolker Chem. Wks., 80 Lister Ave., Newark, N. J.
Koppers Co., Pittsburgh 19
Michigan Chemical Corp., St. Louis, Mich.
Penna. Salt Mfg. Co., Widener Bldg., Phila.
S. B. Penick & Co., 50 Church St., N. Y. 7
Pittsburgh Agricultural Chem. Co., 350 Fifth Ave., N. Y.
John Powell & Co., 1 Park Ave., N. Y.

Prentiss Drug & Chem. Co., 110 William St., N. Y.
Rohm & Haas, Inc., 222 W. Washington Sq., Phila.
Shell Chem. Corp., 50 W. 50th St., N. Y. 20
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.
Velsicol Corp., 330 E. Grand Ave., Chicago
Virginia-Carolina Chem. Corp., Richmond 8, Va.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405
Lexington Ave., N. Y.
Whitmire Research Corp., 339 E. Vandeventer, St. Louis

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Dodge & Olcott, Inc., 180 Varick St., N. Y.
Dow Chemical Co., Bush Aromatics Div., 629 Grove St.,
Jersey City 2
P. R. Dreyer, Inc., 119 W. 19th St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Felton Chemical Co., 603 Johnson Ave., N. Y. C.
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Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
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Gunning & Gunning, 601 W. 26th St., N. Y.
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D. W. Hutchinson & Co., 162 Front St., N. Y.
Samuel Klein, 4 Hanover Sq., N. Y. 4
Geo. Lueders & Co., 427 Washington St., N. Y. C.
Lautier Fils, Inc., 321 5th Ave., N. Y. C.
Magnus, Mabée & Reynard, Inc., 16 Desbrosses St., N. Y.
Naugatuck Aromatics, 254 Fourth Ave., N. Y.
New York Aromatics Co., 5 Beekman St., N. Y.
Norda Essential Oil & Chem. Co., 601 W. 26th St., N. Y.
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van Ameringen-Haebler, Inc., 521 W. 57th St., N. Y. 19
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Huber Machine Co., 259-46th St., Brooklyn
Industrial Process Engineers, 8 Lister Ave., Newark 5, N. J.
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Littleford Bros., 443 E. Pearl St., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
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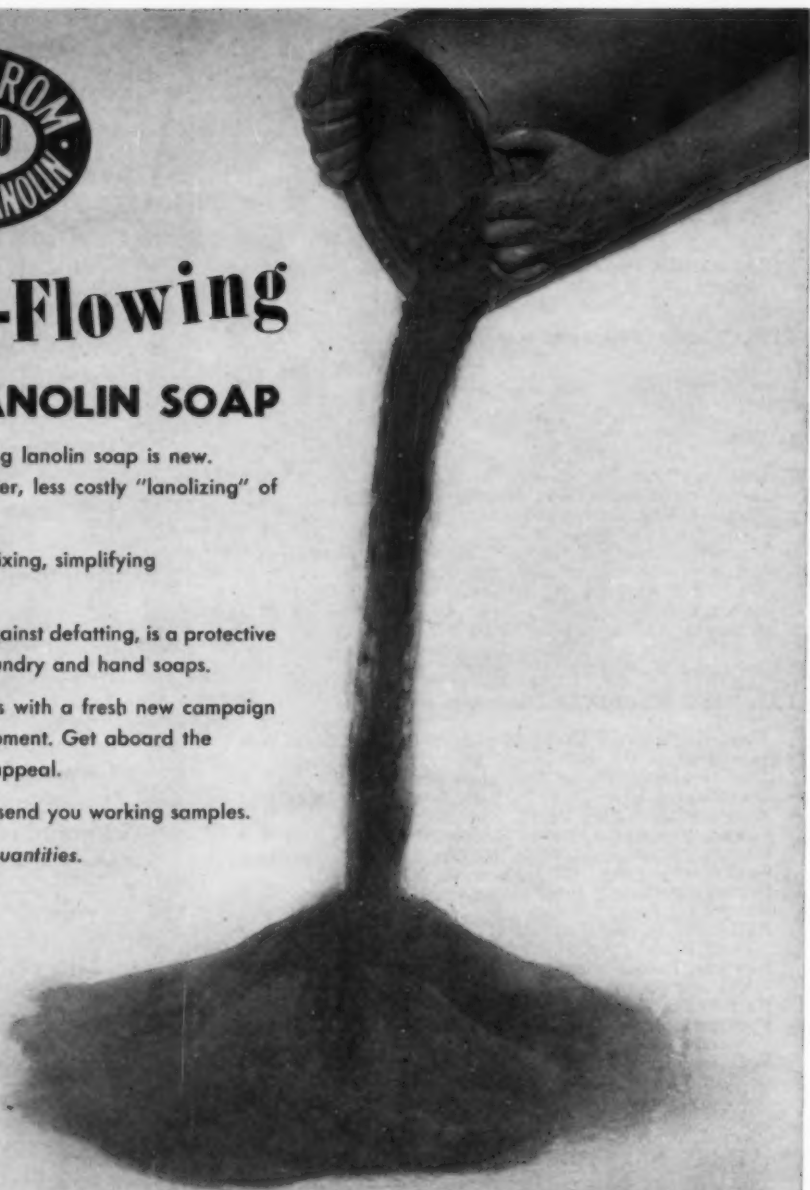
LANOMAL (1 & 2) safeguards against defatting, is a protective for those allergic to ordinary laundry and hand soaps.

Now is the time for adding sales with a fresh new campaign based on the LANOMAL development. Get aboard the driving force of proven lanolin appeal.

Call or write—we'll be happy to send you working samples.

Prompt delivery in commercial quantities.

*NIMCO POWDERED LANOLIN SOAP



Unretouched photograph of free-flowing powdered LANOMAL

N. I. MALMSTROM & CO.

America's Largest Processor of Wool Fat and Lanolin

147 Lombardy St., Brooklyn 22, N. Y.

612 N. Michigan Ave., Chicago 11, Ill.

TYPICAL ANALYSIS (WHEN PACKED)

LANOMAL SOAP #1 (POWDERED)

Lanomal Soap #1 is a prepared free flowing powdered product manufactured by blending 25% of Bentonite with 75% of "Lanolin Soap", with the following typical analysis:

Moisture	2.5%
Unsap. (Lanolin Alcohols)	34.0%
Sodium Soap	63.5%
Combined Sodium Oxide	7.8%
Saponified Lanolin	
Fatty Acids	33.7%
Free Alkali	None
Ph. of 5% aqueous solution	9.3-10.0

LANOMAL SOAP #2 (POWDERED)

Moisture	1%
Unsaponifiables (Lanolin Alcohols)	5%
Sodium Soap	94%
Combined Sodium Oxide	11%
Saponified Lanolin	
Fatty Acids	83%
Free Alkali	None
Ph. of 5% aqueous solution	9.5-10.0

Packing: 300# bbls. or fibre containers.

LABORATORIES, TESTING (Contd.)

Lederer Bacteriological Labs., 269 S. 19th St., Phila.
Harold A. Levey Laboratories, Oleander & Dublin Sts.
New Orleans
J. W. McCutcheon, 475 Fifth Ave., N. Y.
Molnar Laboratories, 211 E. 19th St., N. Y.
Rosoff Laboratories, 60th & Osage, Phila.
Samuel P. Sadtler & Son, 210 S. 13th St., Phila.
Paul H. Scrutcheff, 1237 Church St., Hannibal, Mo.
Seil, Putt & Rusby, 16 E. 34th St., N. Y.
Skinner & Sherman, 246 Stuart St., Boston
Foster D. Snell, 29 W. 15th St., N. Y.
Soap Consultants, Inc., 7 Coolidge Ave., Boston, Mass.
Stillwell & Gladding, 130 Cedar St., N. Y.
United States Testing Co., 1415 Park Ave., Hoboken,
N. J.
Wisconsin Alumni Research Foundation, Madison, Wis.

LABORATORY ANIMALS

Albino Farms, Red Bank, N. J.
Breeding & Lab. Inst., 619 Kent Ave., Brooklyn
Foster D. Snell, 29 W. 15th St., N. Y. 11

LABORATORY APPARATUS AND EQUIPMENT

Bersworth Chem. Co., Framingham, Mass. (Water Hard-
ness Test Kits)
Cargille Scientific, Inc., 118 Liberty St., N. Y. 6 (chlorine
and quaternary test kits)
Central Scientific Co., 1700 W. Irving Pk., Chicago
J. H. Day Co., Inc., Cincinnati 22 (roller mills)
Harry W. Dietert Co., 9330 Roselawn Ave., Detroit (de-
vice for determining moisture content)
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Eimer & Amend, 633 Greenwich St., N. Y.
Fisher Scientific Co., Pittsburgh
Emil Greiner Co., 161—6th Ave., N. Y.
Laboratory Construction Co., 111 Holmes St.,
Kansas City, Mo.
J. M. Lehmann Co., 566 New York Ave., Lyndhurst, N. J.
(mills and plodders)
Mixing Equipment Co., 167 Mt. Read Blvd., Rochester
Pfaltz & Bauer, 350—5th Ave., N. Y.
Chas. Ross & Son Co., 148 Classon Ave., Brooklyn 5
(roller mills and mixers)
Scientific Materials Co., Pittsburgh
Arthur H. Thomas Co., Wash. Sq., Phila.
U. S. Stoneware Co., 60 E. 42nd St., N. Y. 17 (Ball Mills)
U. S. Testing Co., 1415 Park Ave., Hoboken, N. J.)
Will Corp., Rochester, N. Y.

LABORATORY CHEMICALS

J. T. Baker Chemical Co., Phillipsburg, N. J.
E. I. du Pont de Nemours & Co., Wilmington
Fine Organics, Inc., 211 E. 19th St., N. Y. 3
Fisher Scientific Co., 717 Forbes St., Pittsburgh
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Mallinckrodt Chemical Works, 3600 N. 2nd St., St. Louis
Merck & Co., Rahway, N. J.

LANOLIN

American Lanolin Corp., Lawrence, Mass.
Bopf-Whittam Corp., Linden, N. J.
Botany Worsted Mills, Passaic, N. J.
Frank G. Fanning Co., 352 Doremus Ave., Newark, N. J.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Griffin Chem. Co., 1090 16th St., San Francisco
Hummel Chemical Co., 90 West St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350—5th Ave., N. Y.
Robinson-Wagner Co., 110 E. 42nd St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

LAUNDRY BLEACH (Sodium Hypochlorite)

American Soap & Washoline Co., Cohoes, N. Y.
A-M-R Chemical Co., 985 E. 35th St., Brooklyn 18
Chemical Mfg. & Dist. Co., Easton, Pa.

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Chrisman Supply Co., Fayetteville, N. Y.
Columbia-Southern Chem. Corp., Pittsburgh
Cowles Chemical Co., 7016 Euclid Ave., Cleveland
Delta Chemical Mfg. Co., 2101 Washington Blvd.,
Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City
Higley Chemical Co., Dubuque, Iowa
Hysan Products Co., 932 W. 38th Place, Chicago
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Legrand Bleach Corp., 111—49th St., Brooklyn
Lorenz Chem. Co., 135 No. 32nd Ave., Omaha
Mathieson Chemical Corp., Baltimore
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rosethal Bercow, 25 E. 26th St., N. Y. 10
Thompson-Hayward Chemical Co., Kansas City, Mo.
Jos. Turner & Co., Ridgfield, N. J.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405
Lexington Ave., N. Y.
Washine-National-Sands, Inc., 37-02 Northern Blvd.,
Long Island City
Welch, Holme & Clark Co., 439 West St., N. Y. 14

LAUNDRY BLUING

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Cowles Chemical Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., Cleveland 14
E. F. Drew Co., 15 E. 26th St., N. Y. 10
Fezandie & Sperrle, 205 Fulton St., N. Y.
General Dyestuff Corp., 435 Hudson St., N. Y.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
National Aniline Div., Allied Chem. & Dye Corp.,
40 Rector St., N. Y.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pylam Products Co., 799 Greenwich St., N. Y.
Washine-National-Sands, Inc., 37-02 Northern Blvd.,
Long Island City
Welch, Holme & Clark Co., 439 West St., N. Y.

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Albany Soap Corp., 46 Delaware Ave., Albany 3, N. Y.
American Soap & Washoline Co., Cohoes, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Chicago Sanitary Prods. Co., 3100 S. Throop St.,
Chicago 8
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
E. F. Drew Co., 15 E. 26th St., N. Y. 10
Du Bois Soap Co., Cincinnati, O.
East Coast Soap Corp., 89 Coffey St., Bklyn.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Essential Chemicals Co., 2200 N. 32nd St., Milwaukee 8
Fels & Co., Philadelphia
Hewitt Soap Co., Dayton, O.
Kamen Soap Products Co., 233 Broadway, N. Y. 7
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave., & Bridgewater St.,
Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Manhattan Soap Co., Bristol, Pa.
National Soap Co., 357 S. 25th St., Tacoma, Wash.
Newell Gutrad Co., 350 Fremont St., San Francisco, Cal.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
North Coast Chem. & Soap Wks., Seattle, Wash.
Standard Soap Co., Camden, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Tennessee Soap Co., 1702 N. Thomas Ave., Memphis,
Tenn.
Vliet Soap Co., 638 Monroe St., Brooklyn, N. Y.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Miss.
Wolf Soap Co., 1116 Wyckoff Ave., Bklyn. 27
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

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American Soap & Washoline Co., Cohoes, N. Y.
Armour & Co., 1355 W. 31st St., Chicago



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Copeland Laboratories, 774 College St., Toronto, Can.
E. F. Drew Co., 15 E. 26th St., N. Y. 10
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Essential Chemicals Co., 2200 N. 32nd St., Milwaukee 8
Harris Soap Co., Buffalo, N. Y.
Hewitt Soap Co., Dayton, Ohio
Kamen Soap Products Co., 233 Broadway, N. Y. C.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Nat'l Milling & Chem. Co., 4601 Nixon St., Phila. 27
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Standard Soap Co., Camden, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Tennessee Soap Co., 1702 N. Thomas Ave., Memphis, Tenn.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

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American Soap Powder Wks., 100 Van Dyke St., Brooklyn, N. Y.
American Soap & Washoline Co., Cohoes, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Chemical Mfg. & Dist. Co., Easton, Pa.

Chicago Sanitary Prods., 3100 S. Throop St., Chicago 8

Colgate-Palmolive-Peet Co., Jersey City, N. J.
Copeland Laboratories, 774 College St., Toronto, Can.
Cowles Chemical Co., 7016 Euclid Ave., Cleveland, Ohio
Cudahy Packing Co., 221 N. La Salle St., Chicago
E. F. Drew Co., 15 E. 26th St., N. Y. 10
Du Bois Soap Co., Cincinnati, O.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Essential Chem. Co., 2200 N. 32nd St., Milwaukee 8
General Biochemicals, Inc., Chagrin Falls, Ohio
Hewitt Soap Co., Dayton, Ohio
Hygiene Products, 169 St. Cyr, Montreal, Canada
Kamen Soap Products Co., 233 Broadway, N. Y. C.
Los Angeles Soap Co., Los Angeles, Calif.
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Murro Chemical Co., P. O. Box 185, Asheville, N. C.
National Milling & Chem. Co., 4601 Nixon St., Phila. 27
Nopco Chem. Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Standard Soap Co., Camden, N. J.
John Stanley Co., 642 W. 30th St., N. Y.
Stevens Soap Corp., 202 Sullivan St., Brooklyn
Swift & Co., Union Stock Yards, Chicago
Tennessee Soap Co., 1702 N. Thomas Ave., Memphis 1, Tenn.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
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American Fluoride Corp., 151 W. 19th St., N. Y.
Blockson Chemical Co., Joliet, Ill.

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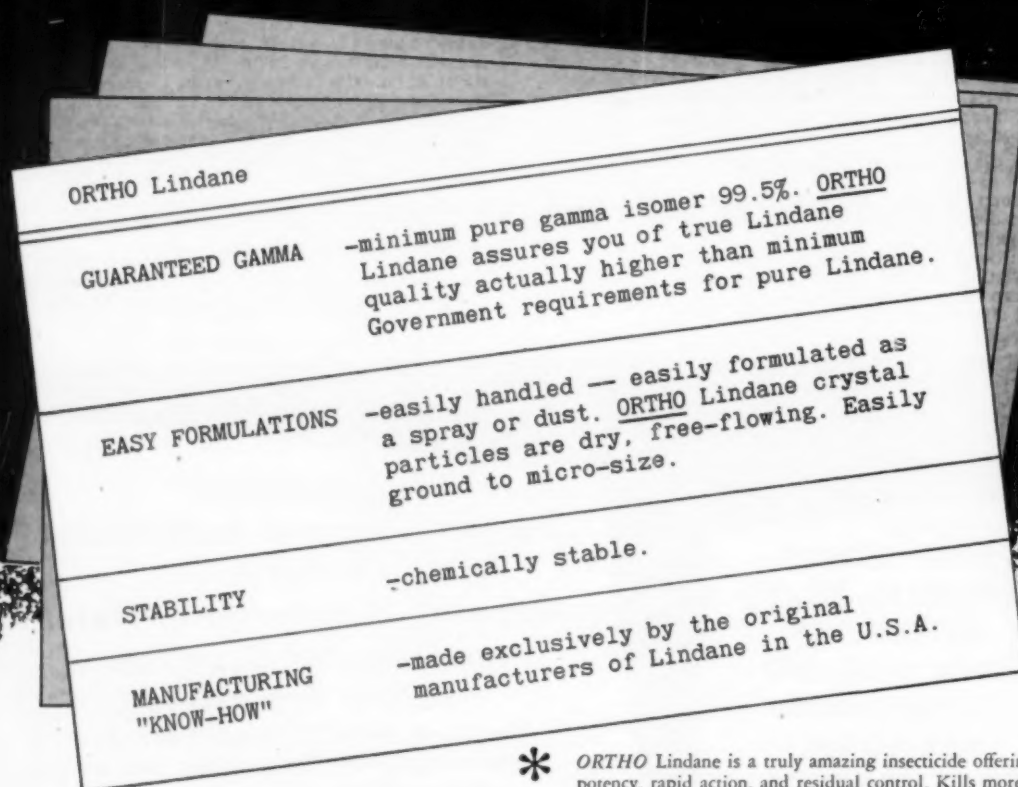
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General Chem. Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Hummel Chem. Co., 90 West St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Port Huron Detergent Co., Port Huron, Mich.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Standard Chem. Co., Columbus, O.
John T. Stanley Co., 642 W. 30th St., N. Y. C.
Henry Sundheimer, Inc., 103 Park Ave., N. Y.
Thompson-Hayward Chemical Co., Kansas City, Mo.
Victor Chemical Wks., 141 W. Jackson Blvd., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chemicals Corp., J. B. Ford Div., Wyandotte,
Mich.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LAVENDER OIL (see Essential Oils)

LAURIC ACID (see also Fatty Acids)

Armour & Co., 1355 W. 31st St., Chicago
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E. F. Drew & Co., 15 E. 26th St., N. Y. 10
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General Mills, Chem. Div., 400 S. 2nd Ave., Minneapolis 1
Griffin Chem. Co., 100 16th St., San Francisco, Calif.
A. Gross & Co., 295 Madison Ave., N. Y. 17
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Robinson Wagner Co., 110 E. 42nd St., N. Y.
Swift & Co., Chicago
Arthur C. Trask Co., 4103 S. LaSalle St., Chicago 9
Welch, Holme & Clark Co., 439 West St., N. Y. 14
Woburn Chemical Corp., Harrison, N. J.

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Archer-Daniels-Midland Co., Minneapolis 2
E. I. du Pont de Nemours & Co., Wilmington, Del.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y. C.
W. Michel & Co., 90 Broad St., N. Y.
F. Ritter & Co., 4641 Hollywood Blvd., Los Angeles 27
Robinson Wagner C., 110 E. 42nd St., N. Y.

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Chipman Chem. Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Geigy Co., 89 Barclay St., N. Y.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Heckathorn & Co., Richmond, Calif.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Sherwin-Williams Co., Cleveland, O.

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American Lecithin Corp., Corona Ave., Elmhurst, L. I.
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W. A. Cleary Corp., New Brunswick, N. J.
Digestive Ferments Co., 930 Henry St., Detroit
Enco Co., 441 Lexington Ave., N. Y.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Merck & Co., Rahway, N. J.
Ross & Rowe, Inc., 50 Broadway, N. Y.
Soya Corp. of America, 36 Rockefeller Plaza, N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.
Wilson Labs., 4221 S. Western Blvd., Chicago

LEMON OIL, LEMONGRASS OIL (see Essential Oils)

1952 BLUE BOOK

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Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Hoosac Valley Lime Co., Adams, Mass.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lehigh Lime Co., 111 W. Washington St., Chicago
National Gypsum Co., 192 Delaware Ave., Buffalo, N. Y.
Penna. Salt Mfg. Co., Widener Bldg., Phila. 7
Rockland-Rockport Lime Co., Rockland, Maine
Thompson-Hayward Chem. Co., Kansas City 8, Mo.
U. S. Lime Prods. Corp., 85 Second St., San Francisco
Whiterock Quarries, Inc., Bellefonte, Pa.
Whittaker, Clark & Daniels, Inc., 260 Bway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

LIME SULFUR

Allen Co., Pittstown, N. J.
California Spray-Chemical Corp., Lucas & Ortho Way,
Richmond, Calif.
Chipman Chemical Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Heckathorn & Co., Richmond, Calif.
Miller Prods. Co., 1932 S. W. Water Ave., Portland, Ore.
Taylor Chem. Wks., Aberdeen, N. C.

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Ethyl Corp., 100 Park Ave., N. Y.
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Kolker Chem. Works, 80 Lister Ave., Newark, N. J.
Penn. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pittsburgh Agric. Chem. Co., 350 5th Ave., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Westvaco Chem. Div., 405 Lexington Ave., N. Y.

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LINALOOL (see Aromatic Chemicals)

LINALYL ACETATE (see Aromatic Chemicals)

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Kelloggs & Miller, Amsterdam, N. Y.
Pacific Vegetable Oil Corp., 62 Townsend St.,
San Francisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
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Dow Chemical Co., Midland, Mich.
Innis Speiden & Co., 117 Liberty St., N. Y. 6
Michigan Chemical Corp., St. Louis, Mich.
Merck & Co., Rahway, N. J.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 415
Lexington Ave., N. Y. 17
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y. 13

MAGNESIUM OXIDE (Magnesia)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Chas. B. Chrystal Co., 53 Park Pl., N. Y. 7
Diamond Alkali Co., 300 Union Commerce St.,
Cleveland 14
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Heckathorn & Co., Richmond, Calif.
Innis, Speiden & Co., 117 Liberty St., N. Y. 6
Merck & Co., Rahway, N. J.
Mallinckrodt Chemical Wks., 2nd & Mallinckrodt Sts.,
St. Louis 7
Michigan Chem. Corp., St. Louis, Mich.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
E. E. Schundler & Co., Joliet, Ill.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405
Lexington Ave., N. Y.
Whittaker, Clark & Daniels, Inc., 260 W. Bway., N. Y. 13
Witco Chemical Co., 295 Madison Ave., N. Y.

MAGNESIUM STEARATE (see Stearates)**MAHOGANY SULFONATES (see Naphthenic Acids)****MAHOGANY SOAP (see also Naphthenic Acids, Naphthalene Sulfonates, Petroleum Sulfonates.)**

Armour Soap Wks., 1355 W. 31st St., Chicago
Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. F. Drew & Co., 152 E. 26th St., N. Y. 10
Elgo Trading Corp., 220 Broadway, N. Y. 7
Emery Industries, 4300 Carew Tower, Cincinnati
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Oil States Pet. Co., 233 Broadway, N. Y.
Oronite Chemical Co., 38 Sansome St., San Francisco
Pennotex Oil Corp., 29 Broadway, N. Y. 6
Pennsylvania Refining Co., Butler, Pa.
John T. Stanley Co., 642 W. 30th St., N. Y.

MANILA GUM

T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Gillespie-Rogers-Pyatt Co., 75 West St., N. Y.
O. G. Innes Corp., 82 Wall St., N. Y.
Geo. H. Lincks, Inc., 312 Bridge St., Bklyn.
Wm. H. Scheel, Inc., 38 Franklin Street, Brooklyn
Arthur C. Trask Co., 4103 S. LaSalle St., Chicago
U. S. Industrial Chemicals, Inc., Lincoln Bldg., N. Y.

MARINE SOAPS (see Salt Water Soaps)**MATS (Corrugated, Perforated, Link)**

American Mat Corp., 1799 Adams St., Toledo 4, O.
Perfo Mat & Rubber Co., 281 Fifth Ave., N. Y. 16
U. S. Rubber Co., 1230 Ave. of Americas, N. Y.

MATS (Fibre, Straw)

Allied Mat & Matting Co., 279 Pearl St., N. Y.
Samuel Aronson & Son, 233 W. 14th St., N. Y.
Frank T. Greco, 305 5th Ave., N. Y.
Koffler Sales Corp., 3757 N. Racine Ave., Chicago 15
S & S Patents, Inc., 1241 N. Clark St., Chicago

MECHANIC'S HAND PASTE (see Hand Soap)**MEDICINAL SOAPS, CAKE**

Armour Soap Wks., 1355 W. 31st St., Chicago
J. Eavenson & Sons., Del. & Penn Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
Newell Gutrad Co., 350 Fremont St., San Francisco, Cal.
Procter & Gamble Co., Cincinnati
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Stiefel Medicinal Soap Co., Oak Hill, N. Y.
Allen B. Wisley Co., 6801 W. 65th St., Chicago

MEDICINAL SOAPS, LIQUID (see Potash Soaps)**MENTHOL**

(see also Essential Oils)

S. W. Bridges & Co., 82 Wall St., N. Y.
Consumers Import Co., 350 Fifth Ave., N. Y.
Dodge & Olcott, Inc., 180 Varick St., N. Y.
P. R. Dreyer, 117½ W. 19th St., N. Y.
Enco Chem. Corp., 441 Lexington Ave., N. Y.
Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Magnus, Mabee & Reynard, Inc., 16 Desbrosses St., N. Y.
A. Maschmeijer, Jr., Inc., 45 W. 16th St., N. Y.
McKesson & Robbins, Inc., 155 E. 42nd St., N. Y.
Norda Essential Oil & Chem Co., 601 W. 26th St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
F. Ritter & Co., 4001 Goodwin Ave., Los Angeles 39
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Sherka Chemical Co., 86 Orange St., Bloomfield, N. J.
Tombarel Prods., 12 E. 22nd St., N. Y.

MERCURY BICHLORIDE (Corrosive Sublimate)

J. T. Baker Chem. Co., Phillipsburg, N. J.
F. W. Berk & Co., 420 Lexington Ave., N. Y.
General Chemical Div., Allied Chem. & Dye Corp.,
40 Rector St., N. Y.
Heyden Chemical Corp., 393 7th Ave., N. Y.
Mallinckrodt Chemical Works, St. Louis
Merck & Co., Rahway, N. J.
Metalsalts Corp., 200 Wagarow Rd., Hawthorne, N. J.
New York Quinine & Chem. Wks., N. 11th & Berry Sts.,
Brooklyn
Chas. Pfizer & Co., 630 Flushing Ave., Brooklyn, N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10

METAL POLISH (see Polish)**METALLIC SOAPS (see Stearates)****METERS (see Instruments)****METHANOL (Synthetic)**

Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Mathieson Chemical Corp., Balto. 3
Merck & Co., Rahway, N. J.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.

METHYL ANTHRANILATE

(see also Aromatic Chemicals)

Aromatic Products, Inc., 15 E. 30th St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Feltton Chemical Co., 603 Johnson Ave., Brooklyn, N. Y.
Florasynth Labs., Olmstead & Starling Aves., N. Y.
Fritzsche Bros., 76 9th Ave., N. Y. 11
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y. 13
A. Maschmeijer, Jr., Inc., 45 W. 16th St., N. Y.
Polak's Frutal Wks., Middletown, N. Y.
Ungerer & Co., 161 Ave. of Americas, N. Y. 13
Verona Chemical Co., Newark 4, N. J.

METHYL BROMIDE

Dow Chemical Co., Midland, Mich.
Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles
Innis, Speiden & Co., 117 Liberty St., N. Y. 6
Michigan Chem. Co., St. Louis, Mich.
Westvaco Chem. Div., Food Machy. & Chem. Corp.,
405 Lexington Ave., N. Y.

METHYL CELLULOSE

Antara Chemicals, Div. General Dyestuff Corp., 435
Hudson St., N. Y. 14
Dow Chemical Co., Midland, Mich.
Hercules Powder Co., Wilmington, Del.

METHYL SALICYLATE (Artificial Wintergreen)

(see also Aromatic Chemicals)

J. T. Baker Chem. Co., Phillipsburg, N. J.
Dow Chemical Co., Midland, Mich.
Felton Chemical Co., 603 Johnson Ave., Brooklyn, N. Y.
Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Heyden Chemical Corp., 393 7th Ave., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y. 13
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Schimmel & Co., 601 W. 26th St., N. Y. 1
Ungerer & Co., 161 Ave. of Americas, N. Y. 13
Verona Chemical Co., 26 Verona Ave., Newark, N. J.

MILLS, SOAP POWDER (see Soap Machinery & Grinding Machinery)

MINERAL OIL, WHITE (see White Mineral Oil)

MINERAL SOAP (see Petrolatum)

MIRBANE OIL (Nitrobenzene)

(see also Essential Oils)

American Cyanamid Co., Calco Chem. Div., Bound
Brook, N. J.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Fritzsche Bros., 76 9th Ave., N. Y. 11
Innis, Speiden & Co., 117 Liberty St., N. Y. 6
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y. 13
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
National Aniline Div., Allied Chem. & Dye Corp.,
40 Rector St., N. Y.
Naugatuck Aromatics, Inc., 254 Fourth Ave., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y. 1
Ungerer & Co., 161 Ave. of Americas, N. Y. 13

MIXERS (Portable)

Alsop Engineering Corp., 520 Green St., Milldale, Conn.
Consolidated Products Co., 15 Park Row, N. Y. 38 (Used)
Ertel Engineering Corp., Kingston 6, N. Y.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
F. R. Hormann & Co., 186 Joralemon St., Bklyn, 2
Houchin Machinery Co., Hawthorne, N. J.
Industrial Process Engineers, 8 Lister Ave., Newark 5,
N. J.
Mixing Equipment Co., Inc., 167 Mt. Read Blvd.,
Rochester, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago (Used)
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Rapid Machy. Co., Marion, Ia.
Read-Standard Corp., York, Pa.
Geo. C. Rodgers Co., 2401 Third Ave., N. Y.
Chas. Ross & Son Co., 148 Classon Ave., Bklyn. 5
Satisfaction Supply Co., 508 W. Broadway, N. Y. 12
Troy Engine & Machine Co., Troy, Pa.
U. S. Stoneware Co., 60 E. 42nd St., N. Y.

MIXING MACHINERY (Change Can Mixers)

Abbe Engineering Co., 50 Church St., N. Y.
Alsop Engineering Corp., 520 Green St., Milldale, Conn.
Amer. Mach. & Foundry Co., 511 5th Ave., N. Y.
Consolidated Products Co., 15 Park Row, N. Y. 38 (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machy. Co., Hawthorne, N. J.
Kent Machine Works, 39 Gold St., Brooklyn
Mixing Equipment Co., Inc., 167 Mt. Read Blvd.,
Rochester, N. Y.
Newman Tallow & Soap Mach., 1051 W. 35th St.,
Chicago (Used)
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Rapid Machy. Co., Marion, O.
Read-Standard Corp., York, Pa.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Troy Engine & Machine Co., Troy, Pa.
U. S. Stoneware Co., Akron 9, O.

MIXING MACHINERY (Dry Products)

Abbe Engineering Co., 50 Church St., N. Y.
Alsop Engineering Corp., 520 Green St., Milldale, Conn.
Amer. Mach. & Foundry Co., 511 5th Ave., N. Y.
Brower Mfg. Co., 411 N. 3rd St., Quincy, Ill.
Consolidated Products Co., 15 Park Row, N. Y. 38 (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 157 Hudson St., N. Y. (Used)
B. F. Gump Co., 1338 S. Cicero Ave., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Industrial Process Engineers, 8 Lister Ave., Newark 5
Lancaster Iron Works, Lancaster, Pa.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago (Used)
Patterson-Kelley Co., East Stroudsburg, Pa.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
A. E. Poulsen & Co., 2025 San Fernando Rd.,
Los Angeles, Cal.
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Rapid Machy. Co., Marion, Ia.
Raymond Pulverizer Div., 1314 N. Branch St., Chicago 22
Read-Standard Corp., York, Pa.
Robinson Mfg. Co., Muncy, Pa.
Geo. G. Rodgers Co., 2401 Third Ave., N. Y.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn, N. Y.
Scottel, Inc., Swanton, Ohio
Sprout Waldron & Co., Muncy, Pa.

MIXING MACHINERY (Dry Products) (Contd.)

Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Corp., Warren, Pa.
Sturtevant Mill Co., Dorchester, Boston 22, Mass.
U. S. Stoneware Co., 60 E. 42nd St., N. Y. 17

MIXING MACHINERY (General)

Alsop Engineering Corp., 520 Green St., Milldale, Conn.
Amer. Mach. & Foundry Co., 511 5th Ave., N. Y.
Brower Mfg. Co., 411 N. 3rd St., Quincy, Ill.
Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Eastern Eng. Co., 296 Elm St., New Haven, Conn.
Edge Moor Iron Wks., Edge Moor, Del.
Eppenbach, Inc., 45-10 Vernon Blvd., L. I. C., N. Y.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
G.M.T. Colloid Mill Corp., 30 Church St., N. Y. 7
B. F. Gump Co., 1338 S. Cicero Ave., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Industrial Process Engineers, 8 Lister Ave., Newark 5
Kent Machine Works, 37 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., 566 New York Ave., Lyndhurst, N. J.
Littleford Bros., 443 E. Pearl St., Cincinnati
Mixing Equipment Co., 167 Mt. Read Blvd.,
Rochester, N. Y.

Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)

Patterson-Kelley Co., E. Stroudsburg, Pa.
Pfaudler Co., 89 East St., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
A. E. Poulsen & Co., 2025 San Fernando Rd., Los Angeles, Cal.

Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Rapids Machy., Marion, Ia.
Read-Standard Corp., York, Pa.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Raymond Pulverizer Div., 1314 N. Branch St., Chicago 22
Scottdel, Inc., Swanton, Ohio
Sprout Waldron & Co., Muncy, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Mach. Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
Sturtevant Mill Co., Dorchester, Boston 22, Mass.
Troy Engine & Machine Co., Troy, Penna.
Turbo Mixer Corp., 247 Park Ave., N. Y.
U. S. Stoneware Co., 60 E. 42nd St., N. Y. 17
Waterville Foundry & Machine Co., Waterville, N. Y.

MONOSODIUM PHOSPHATE (see Sodium Phosphate)

MOP HANDLES

Amer Standard Mfg. Co., 2515 S. Green St., Chicago
Arcade Industries, Inc., 1776 Wrightwood Ave., Chicago 14
Stanley H. Coffin, 12 Pearl St., Boston
Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Erie Mop & Wringer Co., East Rochester, N. Y.
Howard Dustless Duster Co., Boston
W. E. Kautenberg Co., Freeport, Ill.
Marvel Mop Division, Zelinkoff Co., Kans.
Massasoit Mfg. Co., 72 Park Pl., N. Y.
Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
Rubon Wood Finishing & Prods. Co., 500 W. 7th St., Kansas City, Mo.
Silver-Chamberlin Co., Clayton, N. Y.
White Mop Wringer Co., Fultonville, N. Y.

MOP WRINGERS AND PAILS

Atlantic Stamping Co., 156 Ames St., Rochester, N. Y.
Howard J. Barrett, 1908 Walnut St., Phila.
Stanley H. Coffin, 12 Pearl St., Boston
Colson Mfg. Co., Elyria, O.
Dobbins Mfg. Co., Elkhart, Ind.
Eagle Woodenware Mfg. Co., Hamilton, Ohio
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Geerpres Wringer, Inc., Muskegon, Mich.
Geuder, Paeschke & Frey, Milwaukee, Wis.
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
Market Forge Co., 25 Garvey St., Everett 49, Mass.
Palmer Fixture Co., Waukesha, Wisc.
Rochester Can Co., 100 Greenleaf St., Rochester, N. Y.
Sweet Mop Co., 1913 Fremont Ave., South Pasadena, Cal.
U. S. Steel Prods. Co., 30 Rockefeller Plaza, N. Y. 20
White Mop Wringer Co., Fultonville, N. Y.

MOPPING TANKS AND TRUCKS

Howard J. Barrett, 1908 Walnut St., Phila.
Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Geerpres Wringer, Inc., Muskegon, Mich.
Knet Co., 306 Canal St., Rome, N. Y.
S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
Palmer Fixture Co., Waukesha, Wisc.
White Mop Wringer Co., Fultonville, N. Y.

MOPS

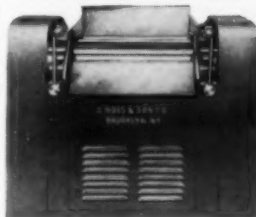
Amer. Standard Mfg. Co., 2515 S. Green St., Chicago
Amer. Textile Prods. Co., 5606 Euclid Ave., Cleveland
Burdett-Rose Mfg. Co., 6100 Independence Rd., Kansas City, Mo.
California Cotton Mills Co., Oakland, Calif.
Chattanooga Broom & Mop Co., Chattanooga, Tenn.
Clark Bros. Mfg. Co., 34 N. Front St., Phila.
Stanley H. Coffin, 12 Pearl St., Boston, Mass.



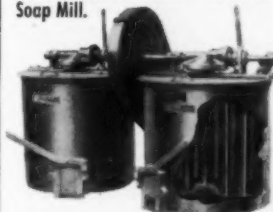
DURABILITY AND

DEPENDABLE SERVICE

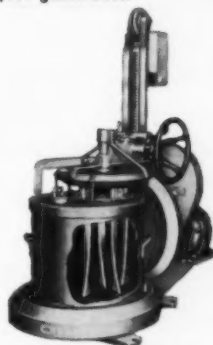
Our 80 years of Ross experience in the manufacture of Mills and Mixers of all types assures the proper selection of equipment to fit your specific processing requirements.



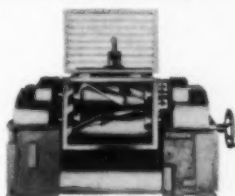
#52V Three Roll Flake — or Toilet Soap Mill.



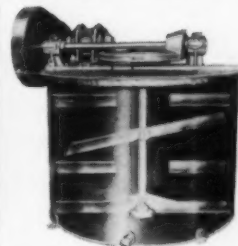
#36RM Mixer — Available in 50-1,000 gallon sizes.



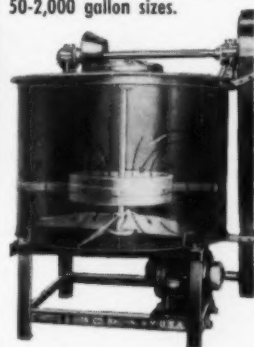
#30C Change Can Mixer — Available in 1-100 gallon sizes.



#41L Kneading Machine — Available in 1 pt.-100 gallon sizes.



#36 Liquid Mixer — Available in 50-2,000 gallon sizes.



#36D Dry Mixer — Available in 1/2-10 barrel sizes.




#42 Horizontal Mixer — Available in 50-1,000 gallon sizes.

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for complete
information

CHARLES ROSS & SON COMPANY

152-156 CLASSON AVENUE, BROOKLYN 5, N. Y.

By special design...

ONLY if it concerns soaps and detergents, floor waxes, polishes, deodorants, insecticides, aerosols, and other chemical specialties and sanitary supplies does a subject receive editorial attention in SOAP & SANITARY CHEMICALS. By design, the magazine does a specialized job in serving this field **only**. Not just an occasional item or two of interest to the field—but 70 or 80 pages of reading matter in **every** issue concentrated right in this field. No dilution of its reading matter with a lot of extraneous stuff on sulfur mining, nitric acid manufacture, or the chemical future of cheesecake.

By special design, SOAP & SANITARY CHEMICALS does not serve—nor claim to serve—the fields of rubber, paper, ceramics, glass, leather, paint, or what-have-you.

By sticking to its knitting in soaps, sanitary and other chemical specialties, it can do a job of genuine advertising coverage—not just a dab of circulation here and a dab there. But better advertising penetration of its market through specialized editorial attention and concentrated circulation.

Old man experience says that you can't cover eight, ten, twelve markets through one medium, even though much high-pressure advertising sales gab is designed to convince you that you can. Too much dilution of editorial matter for any one type of reader. Not enough of interest to the individual reader in **every** issue. Hence, the concentrated circulation of SOAP & SANITARY CHEMICALS in its billion dollar market means top reader interest, top advertising effectiveness.

SOAP & SANITARY CHEMICALS

Published Monthly by

MacNAIR-DORLAND COMPANY

254 West 31st Street, New York 1

MOPS (Contd.)

Eagle Woodenware Mfg. Co., Hamilton, O.
Golden Star Polish Mfg. Co., 2901 E. 13th St., Kansas City, Mo.
Howard Dustless Duster Co., Boston, Mass.
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
Klenzall Mfg. Co., Atlanta, Ga.
Marvel Mop Division, Zelinkoff Co., Wichita, Kans.
Palmer Fixture Co., Waukesha, Wis.
W. M. Pettett Co., Red Fork Sta., Tulsa, Okla.
Piedmont Mop Co., Charlotte, N. C.
Pioneer Mfg. Co., Cleveland, Ohio
Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
Rubon Woodfinishing & Prod. Co., 500 W. 7th St., Kansas City, Mo.
Silver-Chamberlain Co., Clayton, N. J.
Sweet Mop Co., 1913 Fremont Ave., South Pasadena, Cal.
M. J. Toohey & Co., Fall River, Mass.
Tuscaloosa Mills, Tuscaloosa, Ala.
Tu-Way Products Co., 1423 Franklin St., Detroit
Yocma Mills, Water Valley, Miss.

MOSQUITO LARVICIDES

Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
A-M-R Chemical Co., 985 E. 35th St., Bklyn. 18
Baird & McGuire, Inc., Holbrook, Mass.
California Spray-Chemical Corp., Richmond, Calif.
Cary Mfg. Co., 4849 Mansfield St., San Diego 16, Calif.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Chipman Chemical Co., Bound Brook, N. J.
Clifton Chemical Co., 62 William St., N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
E. I. du Pont de Nemours & Co., Wilmington
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay Sa., N. Y.

R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 932 W. 38th Place, Chicago
Koppers Co., Koppers Bldg., Pittsburgh
McCormick & Co., Inc., Baltimore, Md.
Merck & Co., Rahway, N. J.
Michigan Chem. Corp., St. Louis, Mich.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Shell Chemical Corp., 50 W. 50th St., N. Y.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
Thompson-Hayward Chemical Co., Kansas City, Mo.
U. S. Sanitary Specialties Corp., 1003 S. California Ave., Chicago 12
James Varley & Sons, 2100 Switzer Ave., St. Louis
Velsicol Corp., 330 E. Grand Ave., Chicago
Whitmore Research Labs., 389 S. Vandeventer, St. Louis 10
York Chem. Co., 23 Dean St., Bklyn.

MOTH CAKES AND CRYSTALS (see Deodorizing Blocks)

MOTH PROOF BAGS

Clopay Co., Cincinnati
Kennedy Car Liner Co., Indianapolis
LeMontre Co., Cincinnati
Puro Co., 2801 Locust St., St. Louis 3
Rosette Co., 200 Tillary St., Brooklyn

MOTH PROOFING COMPOUNDS

Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
A-M-R Chemical Co., 985 E. 35th St., Bklyn. 18
Analab Laboratories, 285 Franklin St., Boston 10
Antara Chemicals, Div. General Dyestuff Corp., 435 Hudson St., N. Y. 14
Barrett Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.

RAW MATERIALS

FOR THE SOAP AND ALLIED INDUSTRIES:

Every raw material necessary for the manufacture of soap and allied products is carried in stock and is available at the right price for immediate delivery to your door.

ALCOHOL
AMMONIA
BLEACHING POWDER
BORAX
BICARBONATE OF SODA
CARBON TETRACHLORIDE
CALCIUM CHLORIDE
CAUSTIC SODA
CAUSTIC POTASH
DYES
DISODIUM PHOSPHATE
GLAUBER'S SALTS
GLYCERINE
METASILICATE
OXALIC ACID

POTASSIUM CARBONATE
SAL AMMONIAC
SALT
SAL SODA
SILICATE OF SODA
SODA ASH
TRISODIUM PHOSPHATE
CASTOR OIL
COCOANUT OIL
CORN OIL
COTTONSEED OIL
LARD OIL
NEATSFOOT OIL
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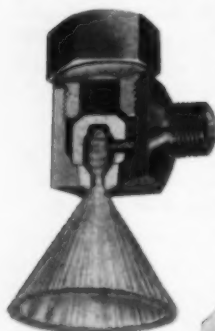
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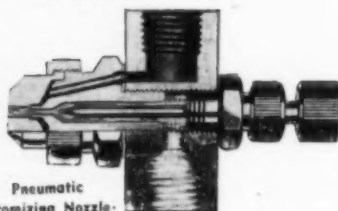
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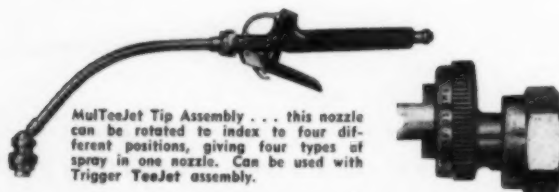
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Innis, Speiden & Co., 117 Liberty St., N. Y.
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Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Sherwood Refining Co., Englewood, N. J.
Sinclair Refining Co., 630-5th Ave., N. Y.
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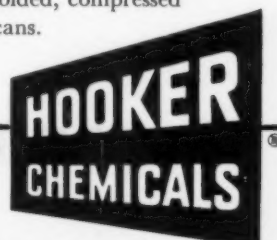
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Oil States Pet. Co., 233 Broadway, N. Y.
Pennsylvania Refining Co., Butler, Pa.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
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Spencer Kellogg & Sons, Buffalo, N. Y.
Leghorn Trading Co., 141 E. 44th St., N. Y.
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AROMATIC CHEMICALS

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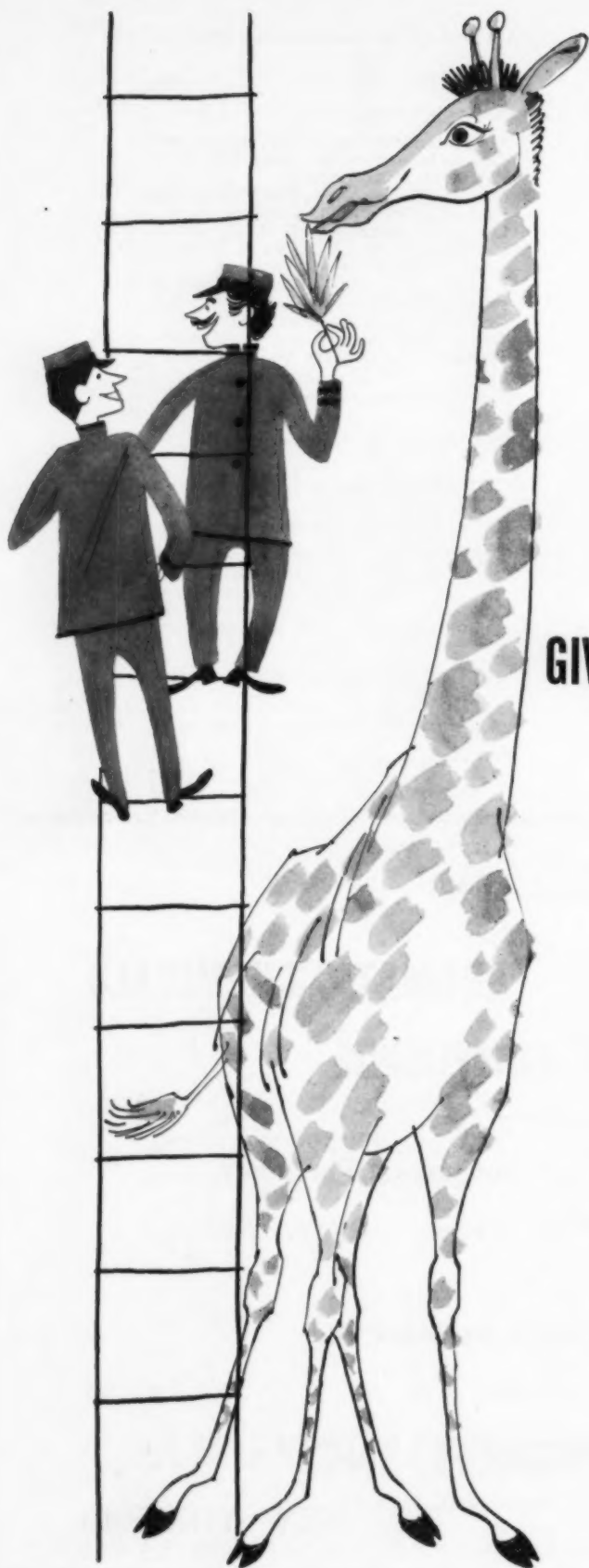
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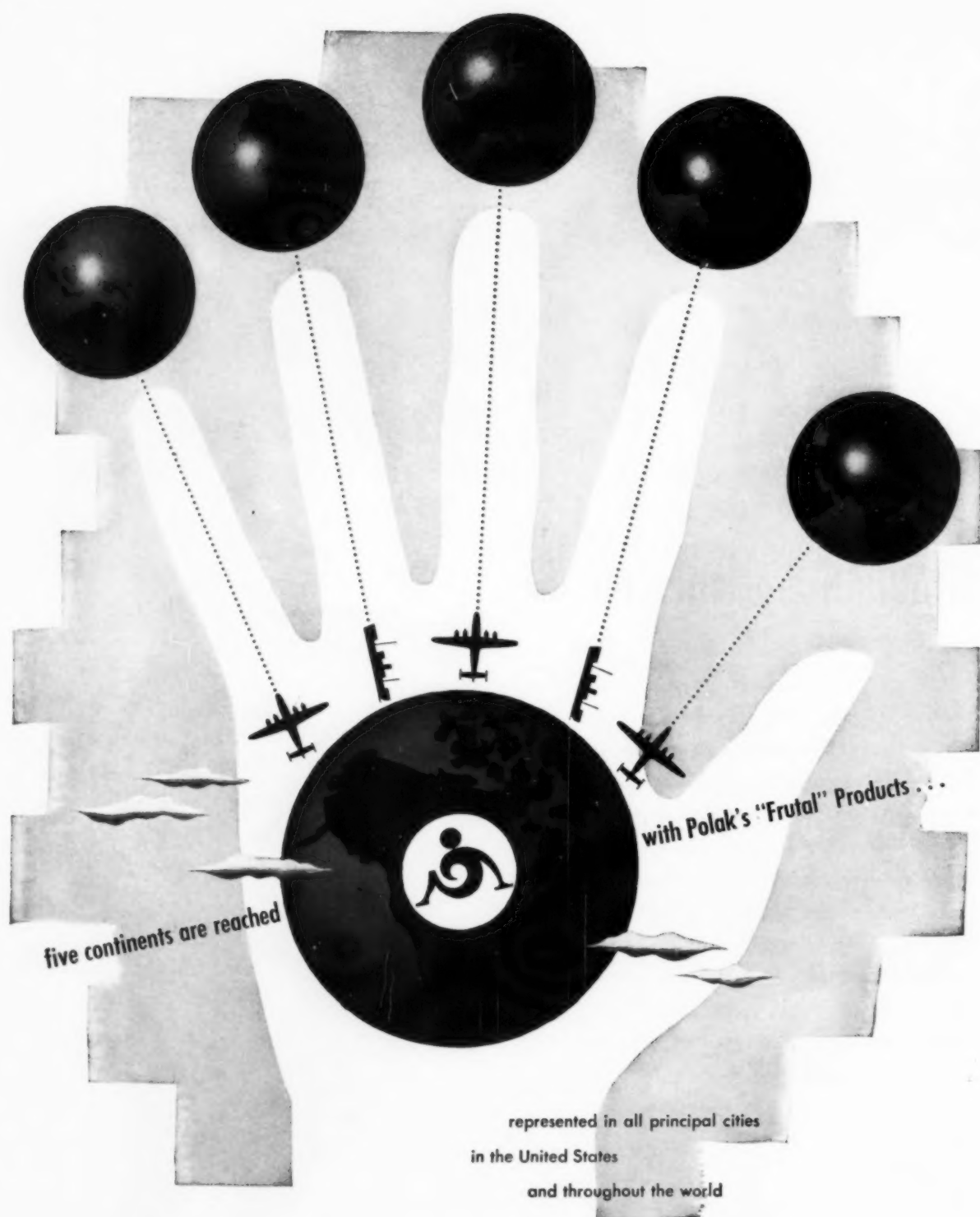
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 Geo. Lueders & Co., 427 Washington St., N. Y.
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Nopco Chemical Co., Harrison, N. J.
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Reilly Tar Chem. Corp., Indianapolis
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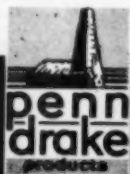
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A.P.I. Gravity	49/50.5	53/55
Specific Gravity @ 60° F	0.775/0.785	0.755/0.765
Saybolt Viscosity @ 100° F	30/31 sec.	29.5/30.5 sec.
Flash Point C.O.C.	170/180° F	130/135
Fire Point C.O.C.	180/190° F	140/145
Initial Boiling Point	385/395° F	330/340
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Boston Chemical Industries, 64 E. Brookline St., Boston
Brilco Labs., 1553—63rd St., Bklyn. 19
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Crystal Soap & Chem. Co., 6300 State Rd., Phila. 35

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Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
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Haag Laboratories, Inc., 140th & Seeley Ave.,
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Hewitt Soap Co., Dayton, O.
Higley Chemical Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.

Hysan Products Co., 932 W. 38th Place, Chicago
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Kearny Mfg. Co., Kearny, N. J.

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Rochester Germicide Co., 333 Hollenbeck St., Rochester 5, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
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Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
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John T. Stanley Co., Inc., 642 W. 30th St., N. Y.
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Tech Soap Mfg. Co., S. Chicago Ave. & 73rd St., Chicago
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Thompson-Hayward Chem. Co., Kansas City, Mo.
Trio Chem. Wks., 341 Scholes St., Bklyn.
Tru-Pine Co., 7638 Vincennes Ave., Chicago 20
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Spec. Corp., 1003 S. California Ave., Chicago 12
James Varley & Sons, 1200 Switzer Ave., St. Louis
Wolf Soap Co., 1116 Wyckoff Ave., Bklyn. 27
G. H. Wood & Co., Toronto, Canada
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(see Disinfectants, Coal Tar and Pine Oil)

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American Turpentine Farmers Association, Valdosta, Ga.
Godfrey L. Cabot, Inc., 77 Franklin St., Boston
John H. Calo Co., 19 Rector St., N. Y. 6
E. W. Colledge, General Sales Agent, Inc., P. O. Box 389, Jacksonville, Fla.
Crosby Chemicals, Inc., DeRidder, La.
Glidden Co., Naval Stores Div., Jacksonville, Fla.
Gulf Naval Stores Supply Co., Whitney Bldg., New Orleans
Hercules Powder Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Newport Industries, Inc., 230 Park Ave., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Southern Pine Chem. Co., Box 389, Jacksonville
Taylor, Lowenstein & Co., Mobile, Ala.

PIPE COILS

Alloy Prods. Corp., 221 Madison St., Waukesha, Wis.
Brighton Copper Works, Cincinnati
Harrisburg Steel Corp., Harrisburg, Pa.
Hartford Tube Products Co., Hartford, Conn.
Houchin Machinery Co., Hawthorne, N. J.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., 4100 N. 5th St., Phila.
Pittsburgh Pipe Coil & Bending Co., Etna, Pa.
Rempe Co., 340 N. Sacramento Blvd., Chicago
Whitlock Coil Pipe Co., Hartford, Conn.

PLANT SPRAYS (see Agricultural Insecticides)

PLASTIC BOTTLES, (see Bottles, Plastic)

PLATES, STEEL, CORROSION-RESISTANT

(see Steel, Corrosion-Resistant)

PLODDERS (see Soap Machinery)

1952 BLUE BOOK

SOAP

In All Its Forms For
Jobbers and Repackers
Bulk or Packaged

- SOAP FLAKES
- POWDERED SOAP
- MILLED TOILET SOAP
- LIQUID SOAP
- POTASH GREEN SOAP
- HOTEL BAR SOAP—ALL SIZES
- SPECIAL CLEANERS—To your Spec.
- CASTILE SOAP—
Powdered, Liquid, Bars

In ever increasing numbers jobbers and buyers of soaps to be packed under their own label are turning to us for their requirements. Our policy of quality products at a fair price plus speedy service can help you too. Let us know of your needs.

CHICAGO SANITARY PRODUCTS COMPANY

3100 S. THROOP STREET

CHICAGO 8, ILLINOIS



COLUMBIA-SOUTHERN CHEMICALS

FOR SOAP MAKING • SPECIAL MIXTURES • REPACKING

Caustic Soda

Liquid.....50% and 73% NaOH
Solid.....76% Na₂O
Flake.....76% Na₂O, Fine and Medium

Columbia-Southern Caustic Soda is especially desirable for the manufacture of soap because of its freedom from impurities and metallic contamination. Liquid grades are shipped in special tank cars which first made practical the shipment of 73% Caustic Liquor in its purest form. Insulation effectively prevents crystallization and the patented lining prevents metallic contamination in transit.

Other grades test 98-100% Sodium Hydroxide (NaOH), equivalent to 76% Na₂O. Flake Caustic Soda is prepared in two grades of fine and medium sized flakes, free of dust. The finer grade is especially suitable for repacking for household use.

Caustic Potash

Solid....Standard grade. Packed in 700 lb. drums.
Flake....Standard grade. Packed in 400 lb. drums.
Liquid....50% concentration. Shipped in 8,000 and 10,000 gallon tank cars.

Columbia-Southern Caustic Potash is another product of high quality and purity that soap-makers find excellent for use in liquid soap and soft soap manufacture.

Soda Ash—Light and Dense

The original Columbia-Southern chemical. Over a half-century's experience in the manufacture of this essential chemical for soap makers has enabled Columbia-Southern to develop techniques and controls that assure uniform density and regularity of physical form and purity.

Pacific Crystals

Pacific Crystals are a true sodium sesqui-carbonate—unmodified by mechanical mixing—of a tabular, crystalline structure and fine particle size. They are non-irritating, free-flowing, non-caking. They mix readily with dry materials and dissolve quickly in water.

The gentle, safe action of Pacific

Crystals has made it widely accepted by repackers and compounders for many uses such as soap extenders, water softeners, laundry-textile-dairy-tanner's sodas, dishwashing compounds, silk degummers, general cleaning compounds. Pacific Crystals can be used directly in the crutcher in the manufacture of soap builders. Packed in 100 lb. paper bags.

Para-Dichlorobenzene

Columbia-Southern Para-Dichlorobenzene sublimes readily leaving no residue, is soluble in most organic solvents but is insoluble in water. Available in seven mesh sizes to meet the needs of the soap industry in the manufacture of sanitary specialties and deodorants. Shipped in fiber drums, 200, 100, 50 and 25 lbs. net.

Special Cleansers

COLUMBIA-SOUTHERN CLEANER AND CLEANSER is a specially prepared product for general use in all hand cleaning operations. A white powder containing no harmful inactive ingredients, it dissolves rapidly and completely in water. PHOSFLAKE is a uniform blend of Caustic Soda and Tri Sodium Phosphate, prepared in convenient flake form. Especially adapted to machine bottle washing—quick acting, easy to handle (minimizes dust particles that irritate the skin and throat of the operator) superior in sterilizing and rinsing properties.

Modified Sodas

Mixtures of Sodium Carbonate and Sodium Bicarbonate. Especially useful in cleansing operations requiring a mild alkaline detergent-aid. Manufactured in three grades—No. 100, No. 200 and No. 300—with different degrees of alkalinity.

TECHNICAL SERVICE

Columbia-Southern's Technical Service is available for developing the most advantageous uses of these or other Columbia-Southern products in your processes.

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POISONED SEEDS (Poison Grain)

Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
Analab Labs., 285 Franklin St., Boston 10
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore, Md.
Heckathorn & Co., Richmond, Calif.
Hysan Products Co., 932 W. 38th Place, Chicago
O. E. Linck Co., 51 James St., Montclair, N. J.
Sennewald Drug Co., 2721 Chouteau Ave., St. Louis
W. R. Sweeney, Salisbury, Mo.
York Chemical Co., 23 Dean St., Bklyn.

POLISH BASES (see Petroleum Bases)

POLISHES, FURNITURE, AUTO, ETC.

Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
A-M-R Chem. Co., 985 E. 35th St., Bklyn. 10
Analab Labs., 285 Franklin St., Boston 10
Antiseptol Co., 5524 Northwest Highway, Chicago
Banner Chemical Prod. Corp., 60 Elm St., Newark 5
G. Barr & Co., 3601 S. Racine Ave., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Bilco Chemical Co., 607 DeGraw St., Bklyn.
Boston Chemical Industries, 64 E. Brookline St., Boston
Brilco Labs., 1553-63rd St., Bklyn. 19
Buckingham Wax Corp., Borden Ave. and Van Dam St.,
L. I. City, N. Y.
Cadet Laboratories, 10 Clarence Street, Worcester 5,
Mass.
Candy & Co., 2515 W. 35th St., Chicago
Cary Mfg. Co., 4849 Mansfield St., San Diego, Calif.
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Click Chemical Corp., 41 Morrell St., Brooklyn
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Columbus-Dixon, Inc., 333 E. 23rd St., N. Y.
Creco Co., Creco Bldg., L. I. City, N. Y.
Crowell Chemical Co., East Rutherford, N. J.
Davies Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Empire Chem. Prods. Co., 12 Longworth Ave.,
Newark, N. J.
Federal Varnish Division, S. Ashland Ave. at 29th St.,
Chicago
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Golden Star Polish Mfg. Co., Kansas City, Mo.
Gulf Oil Corp., Pittsburgh 30, Pa.
Haag Laboratories, Inc., 140th & Seeley Ave.,
Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
Higley Chemical Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Products Co., 932 W. 38th Place, Chicago
International Metal Polish Co., Indianapolis
S. C. Johnson & Son, Racine, Wisc.
Klix Chem. Co., 2460 Third St., San Francisco
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Knox-All Corp., 1005 E. Sumner Ave., Indianapolis
Lanair Chemical Corp., 236 W. North Avenue, Chicago 10
M. & H. Laboratories, 2703-5 Archer Ave., Chicago
Masury-Young Co., 76 Roland St., Boston
Midland Labs., Dubuque, Ia.
North Coast Soap & Chem. Wks., Seattle, Wash.
Oil Specialties & Refining Co., 18 Bridge St., Bklyn.
J. C. Paul & Co., 8140 N. Ridgeway Ave., Skokie, Ill.
Perrow Chemical Co., Hurt, Va.
Pioneer Mfg. Co., 3053 E. 87th St., Cleveland
Puritan Chem. Co., 209 Peters St., S.W., Atlanta
Puritan Co., 573 Lyell Ave., Rochester, N. Y.
Quaker Chem. Prods. Co., Conshohocken, Pa.
Scranton Chemical Co., Scranton, Pa.

Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
Theo. B. Robertson Prods. Co., 700 W. Division St.,
Chicago

Science Industries, 609 Geyer Ave., St. Louis
Shawmut Specialty Co., 313 Centre St., Boston
Shell Chemical Corp., 50 W. 50th St., N. Y. 18
Shield-All Co., 9918 43rd Ave., Corona, N. Y.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Slick-Shine Co., 207 Astor St., Newark, N. J.
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
S. S. Stafford, Inc., 603 Washington St., N. Y.
John C. Stalford & Sons, 319 W. Pratt St., Baltimore
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
H. F. Staples Co., Medford, Mass.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Tech Soap Mfg. Co., 7310 S. Chicago Ave., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Trio Chem. Wks., 341 Scholes St., Bklyn.
Tri-Laq Chemical Co., 25 No. Portland Ave., Brooklyn
Twin City Shellac Co., 340 Flushing Ave., Brooklyn
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 1003 S. California Ave.,
Chicago 12
Vestal, Inc., 4963 Manchester St., St. Louis 10
Victory Chem. Co., 148 Fairmont Ave., Phila.
T. F. Washburn Co., 2244 Elston Ave., Chicago
Wilco Co., 4425 Bandinni Blvd., Los Angeles
Windsor Wax Co., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Canada
Woodlets, Inc., Portland, Pa.

POLISHES, METAL

Ampion Corp., 4-88 47th Ave., L. I. C., N. Y.
Banner Chemical Prod. Corp., 60 Elm St., Newark, N. J.
Bilco Chemical Co., 607 DeGraw St., Brooklyn, N. Y.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West St., Balto.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Cole Laboratories, 22-19 37th Ave., L. I. C., N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Balto.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, 140th & Seeley Ave., Blue Island, Ill.
R. M. Hollingshead Corp., Camden, N. J.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Products Co., 932 W. 38th Pl., Chicago
M. & H. Laboratories, 2703-5 Archer Ave., Chicago
Midland Laboratories, Dubuque, Ia.
Perrow Chemical Co., Hurt, Va.
E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
John C. Stalford & Sons, 319 W. Pratt St., Baltimore
Tesco Chem. Co., P. O. Box 4748, Atlanta
Trio Chem. Wks., 341 Scholes St., Bklyn.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y.
U. S. Sanitary Specialties Corp., 1003 S. California
Ave., Chicago
G. H. Wood & Co., Toronto, Can.

POLISHING CLOTHS (see Wiping Cloths)

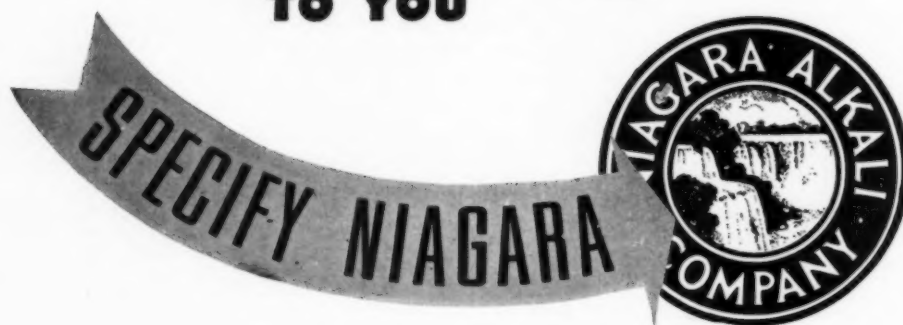
POLISHING MACHINES (see Floor Machines)

POTASH, CAUSTIC

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Columbia-Southern Chemicals, Fifth Avenue at
Bellefield, Pittsburgh 23
Diamond Alkali Co., Union Commerce Bldg., Cleveland
E. I. du Pont de Nemours & Co., Wilmington
Julius Hyman & Co., Denver, Colo.
Innis, Speiden & Co., 117 Liberty St., N. Y.
International Minerals & Chemical Corp., 20 N. Wacker
Dr., Chicago

**IF QUALITY
AND SERVICE ARE
IMPORTANT
TO YOU**



NIALK* CAUSTIC POTASH — *Liquid, Flake, Granular or Solid*

is the product of pioneer research and manufacture. Quality and good service are assured by our long experience in producing and handling this product.

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is famous for its purity—indicated by its remarkably white and uniform color. Liquid shipped in tank cars of 8,000 and 10,000 gallons.

NIALK CARBONATE OF POTASH — *Calcined, Hydrated and Liquid 47%*

is the first to be made in this country. Niagara has always set the standard for American manufacture of this product. Specify Niagara for quality and uniformity.

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is distinguished for the fine, white uniformity of its crystals. It is available in any size or type of container you prefer... and is produced to meet the most exacting demands.

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is a versatile industrial chemical for which Niagara has developed a manufacturing process. It is suggested for use as an intermediate or compounding material for the manufacture of dyes, esters, synthetic rubbers, pharmaceuticals, plasticizers, insulating materials, fungicides, protective coatings, lubricants and synthetic resins.

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Niagara EBG Liquid Chlorine is backed by advanced knowledge and experience that can be of continuous value to obtaining best results from its use. A new 48-page booklet giving essential data on applications, characteristics, physical properties and handling is available on request.

NIALK TRICHLORethylene

Because of its unusual solvent properties, this product is steadily finding expanding outlets as an excellent degreasing and metal-cleaning agent, as well as for a variety of other uses. NIALK TRICHLORethylene meets the most exacting demands for a product of high quality and superior stability. Available in tank cars of 6,000-8,000 and 10,000 gallons capacity and 55-gallon non-returnable steel drums—net weight 650 pounds.

*Trade-Mark

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Great Chemical Enterprise

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60 East 42nd Street, New York 17, N. Y.

POTASH, CAUSTIC (Contd.)

Niagara Alkali Co., 60 E. 42nd St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405 Lexington Ave., N. Y.

POTASH SOAPS (Soft Soaps, Liquid Soaps, Shampoo Soaps, etc.)

American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
Analab Labs., 285 Franklin St., Boston 10
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st St., Chicago
Arrow Laboratories, 236 W. North Ave., Chicago
Banner Chemical Products Corp., 60 Elm St., Newark, N. J.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Buckingham Wax Co., 51-03 Van Dam St., L. I. City, N. Y.
Chemical Mfg. & Distrib. Co., Easton, Pa.
Chemical Service Co., Baltimore
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
James Counts Soap Co., 2nd & Washington Aves., St. Louis, Mo.
Creco Co., Creco Bldg., L. I. City, N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Phila. 35
Davies Young Soap Co., Dayton, Ohio
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Essential Chemicals, 2200 N. 32nd St., Milwaukee 8
Fine Organics, Inc., 211 E. 19th St., N. Y. 3
Fuld Bros., 702 S. Wolfe St., Baltimore
Industrial Materials Co., 1017 McCall St., Houston, Tex.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 140th & Seeley Ave., Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
Hewitt Soap Co., Dayton, O.
Higley Chemical Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hygiene Products, 169 St. Cyr, Montreal, Canada
Hysan Products Co., 932 W. 38th Place, Chicago
J. Chemical Works, 602 W. 37th St., N. Y.
Kranich Soap Co., 54 Richards St., Brooklyn
Laurel Soap Mfg. Co., Tioga & Almond Sts., Philadelphia
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
M. & H. Laboratories, 2705 Archer Ave., Chicago
Midland Labs., Dubuque, Ia.
Mione Mfg. Co., Collingdale, Pa.
National Milling & Chem. Co., 4601 Nixon St., Phila. 27
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Chem. & Soap Wks., Seattle, Wash.
N. Y. Soap Co., 258 Third St., Brooklyn
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis 3
Piatt & Smillie Chemicals, 2329 Pine St., St. Louis 3
Procter & Gamble Co., Cincinnati, O.
Puritan Co., 573 Lyell Ave., Rochester, N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., 333 Hollenbeck St., Rochester 5, N. Y.
Royal Soap & Chem. Co., 511 S. Central Ave., Los Angeles
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Standard Soap Co., Camden, N. J.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Chicago 9
Tech Soap Co., S. Chicago Ave. & 73rd St., Chicago
Trio Chem. Wks., 341 Scholes St., Bklyn.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Specialties Corp., 1003 S. California Ave., Chicago 12
G. H. Wood & Co., Toronto, Canada
Woodlets, Inc., Portland, Pa.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

POTASSIUM CARBONATE

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
John H. Calo Co., 19 Rector St., N. Y. 6
T. G. Cooper, & Co., 2400 E. Venango St., Phila. 34
E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Chas. Page & Co., 50 E. 42nd St., N. Y. 17
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

POTASSIUM PERSULFATE

J. T. Baker Chem. Co., Phillipsburg, N. J.
Buffalo Elec. Chem. Co., River Rd., Buffalo, N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Merck & Co., Rahway, N. J.
Penn. Salt Mfg. Co., Widener Bldg., Phila.
Jos. Turner & Co., Ridgefield, N. J.

POTASSIUM PHOSPHATES

Monsanto Chemical Co., St. Louis, Mo.
Victor Chemical Works, 141 W. Jackson Blvd., Chicago 4
Westvaco Chemical Div., Food Mach. & Chem. Corp., 405 Lexington Ave., N. Y. 17

POTASSIUM SILICATES

E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Philadelphia Quartz Co., Public Ledger Bldg., Independence Sq., Phila. 6
Welch, Holme & Clark Co., 439 West St., N. Y.

POURING SPOUTS (see Can Spouts, Closures)

POWDERED SOAP (see Soap, Powdered) Do not confuse with Soap Powders)

PREMIUMS

Anchor Hocking Glass Corp., Lancaster, O. (glassware)
Federal Tool Corp., 3600 W. Pratt Blvd., Chicago
Goody Mfg. Co., 15 E. 22nd St., N. Y. (novelties)
Hazel-Atlas Co., Wheeling, W. Va. (glassware)
Holgate Co., Kane, Pa. (woodenware toys)
Keystone Processed Prods. Co., 683 Broadway, N. Y.

PRESSES (Automatic Soap)

Consolidated Prods Co., 15 Park Row, N. Y. 38 (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
R. A. Jones & Co., P. O. Box 485, Cincinnati 1
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)

PRESSES (Foot and Hand Lever for Soap and Para Cakes)

Consolidated Prods Co., 15 Park Row, N. Y. 38 (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
F. J. Stokes Mach. Co., Philadelphia, Pa.

PRIVATE LABEL PACKAGING, FILLING (see Packaging for the trade)

PROPELLENTS. (see Aerosol Dispersants)

Why you're when you use **SAFE ONYX QUATS!**

1. They're Tested for Toxicity!

2. They're Uniform Chemical Compounds!

3. They Do Not Deteriorate in Storage!

4. They've Been Widely Field-Accepted!

BTC*

Alkyl dimethyl benzyl ammonium chloride. The most widely used cationic bactericide and deodorant. Sold in 50% aqueous solution to disinfectant and germicide manufacturers for dilution and/or incorporation in their own products.

TETROSAN

Alkyl dimethyl 3,4 dichloro benzyl ammonium chloride, plus alkenyl dimethyl ethyl ammonium bromide. In extensive use as a disinfecting, deodorizing and preventive antiseptic in veterinary and livestock medicines. Also used in pharmaceuticals for topical applications. Sold in 60% aqueous solution.

ISOTHAN Q15*

Lauryl Isoquinolinium bromide. An excellent fungicide. Widely used in the formulation of compounds for use in the control of athlete's foot and dandruff. Sold in 20% aqueous solution.

ONYXIDE*

Alkenyl dimethyl ethyl ammonium bromide. The most effective algacide now available. In wide use in swimming pools, cooling water, air-conditioning systems, etc. Sold as a 75% concentrate in isopropanol or propylene glycol.

*Trade Mark Reg. U.S. Pat. Off.

Onyx has always been a leading factor in the production of quaternary ammonium salts. We make a greater variety of these compounds than any other manufacturer. Some of these are of interest to research departments. Others are used in highly specialized fields. Four of the Onyx Quats, however, are of broad interest in the field of sanitization, algae control, fungicidal treatments and deodorization. Each of these four Onyx Quats has been tested for toxicity and proved for application values in the fields to which they apply. They are listed in the column at the left.

If you are interested in any one of these particular "quats," please ask for data. Onyx BTC is covered in a very thorough technical handbook which also outlines the major characteristics of the quaternaries.



**ONYX OIL & CHEMICAL COMPANY
INDUSTRIAL DIVISION**

186 WARREN ST., JERSEY CITY 2, N. J.

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In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. Johns, Que.

For Export: Onyx International, Jersey City 2, N. J.

West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

PUMICE

California Industrial Minerals Co., Friant, Calif.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.
Heckathorn & Co., Richmond, Calif.
Larue-Axtell Pumice Co., Eustis, Nebr.
Pacific Coast Pumice Co., Bishop, Calif.
Pumice Corp. of America, Grants, N. M.
Wm. R. Rogers, 80 Park St., Beverly, Mass.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Tamms Industries, Inc., 228 N. La Salle St., Chicago
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Whittaker, Clark & Daniels, 260 W. Bway., N. Y.

PUMPS

Alsop Engineering Corp., 520 Green St., Milldale, Conn.
Blackmer Pump Co., Grand Rapids, Mich.
Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
Ertel Engineering Corp., Kingston 6, N. Y.
Filpaco Industries, 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Gould Pumps, Inc., Seneca Falls, N. Y.
Joshua Hendy Iron Wks., Pomona, Calif.
Houchin Machinery Co., Hawthorne, N. J.
Ingersoll-Rand Co., 11 Broadway, N. Y.
Lobee Pump & Machine Co., Buffalo, N. Y.
Manton Gaulin Mfg. Co., 44 Garden St., Everett, Mass.
Oberdorfer Foundries, Inc., 5100 Thompson Rd.,
Syracuse, N. Y.
H. K. Porter Co., Oliver Bldg., Pittsburgh
T. Shriver & Co., Harrison, N. J.
F. J. Stokes Machine Co., Philadelphia, Pa.
Taber Pump Co., 278 Elm St., Buffalo, N. Y.
Viking Pump Co., Cedar Falls, Iowa
Worthington Pump & Machinery Co., 2 Park Ave., N. Y.

PYRETHRUM FLOWERS AND POWDER (Insect Powder)

Derris, Inc., 120 Wall St., N. Y.
Greene Trading Co., 60 Wall St., N. Y. (agents for
foreign sellers)

Heckathorn & Co., Richmond, Calif.
McCormick & Co., Baltimore, Md.
McLaughlin, Gormley, King Co., 1715 Fifth St., S.E.,
Minneapolis
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

PYRETHRUM EXTRACT

Heckathorn & Co., Richmond, Calif.
McCormick & Co., Baltimore
McLaughlin, Gormley, King Co., 1715 Fifth St., S.E.,
Minneapolis
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

PYROPHYLLITE

Attapulugus Clay Co., 210 W. Washington Sq., Phila.
Carolina Pyrophyllite Co., 10 E. 40th St., N. Y.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.
Dicalite Div., 612 S. Flower St., Los Angeles, Calif.
Kennedy Minerals Co., 2550 E. Olympic Blvd.,
Los Angeles, Cal.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Tamms Industries, Inc., 229 N. LaSalle St., Chicago
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Whittaker, Clark & Daniels, 260 W. Bway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

QUATERNARY AMMONIUM COMPOUNDS

Alrose Chem. Co., Box 1294, Providence, R. I.
Antara Chemicals, Div. General Dyestuff Corp., 435
Hudson St., N. Y. 14
Armour & Co., 1355 W. 31st St., Chicago 9

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QUATERNARY AMMONIUM COMPOUNDS

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CETOL (Cetyl Dimethyl Benzyl Ammonium Chloride)
BROMAT (Cetyl Trimethyl Ammonium Bromide)
BRETOL (Cetyl Dimethyl Ethyl Ammonium Bromide)
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QUATERNARY AMMONIUM COMPOUNDS (Contd.)

J. T. Baker Chemical Co., Phillipsburg, N. J.
Chemical Service Co. of Baltimore, Balto. 30
Commercial Solvents Corp., 17 E. 42nd St., N. Y. 17
Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
E. I. du Pont de Nemours & Co., Wilmington
Emulsol Corp., 59 E. Madison St., Chicago
Fine Organics, 211 E. 19th St., N. Y. 3
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Murro Chemical Co., P. O. Box 185, Asheville, N. C.
Nopco Chemical Co., Harrison, N. J.
Onyx Oil & Chem. Co., Jersey City, N. J.
Oronite Chem. Co., 38 Sansome St., San Francisco
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Rohm & Haas, 222 W. Washington Sq., Phila.
Sterwin Chemicals, Inc., 1450 Broadway, N. Y. 18
Jacques Wolf, Passaic, N. J.
Wyandotte Chemicals Corp., J. B. Ford Div.,
Wyandotte, Mich.

RAT EXTERMINATING PRODUCTS

A-M-R Chem. Co., 985 E. 35th St., Bklyn. 18
Barton Chem. Co., 3907 S. Langley Ave., Chicago
California Spray-Chemical Corp., Richmond, Calif.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
E. I. du Pont de Nemours & Co., Wilmington
Eagle Soap Corp., Huntington, Ind.
Ekay Products Co., 323 W. 16th St., N. Y.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
Heckathorn & Co., Richmond, Calif.
Hysan Products Co., 932 W. 38th Place, Chicago
Idico Prods. Co., 1 W. 125th St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lethelin Products Co., Mt. Vernon, N. Y.
O. E. Linck Co., 51 James St., Montclair, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
John Opitz, Inc., 50-14 39th St., Long Island City, N. Y.
S. B. Penick & Co., 50 Church St., N. Y. C.
Per-Mo Products Co., 1716 E. 36th St., Kansas City, Mo.
Pfaltz & Bauer, Inc., 350 Fifth Ave., N. Y.
Pittsburgh Agr. Chem. Co., 350 Fifth Ave., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
Private Brands, Inc., 300 S. 3rd St., Kansas City, Kan.
J. W. Quinn Drug Co., Greenwood, Miss.
Science Industries, 609-15 Geyer Ave., St. Louis
Sennwald Drug Co., 2721 Chouteau Ave., St. Louis
Thompson-Hayward Chem. Co., Kansas City 8, Mo.
Sparhawk Co., Sparkill, N. Y.
Sur-Rid Prods. Co., 455 Paul Brown Bldg., St. Louis
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 1003 S. California Ave.,
Chicago 12
Victory Chem. Co., 148 Fairmount Ave., Philadelphia
York Chemical Co., 23 Dean St., Bklyn.

RAT POISONS (see Squills, Phosphorus Paste, Thallium Sulfate, etc.)

RED OIL (Oleic Acid)

(see also Brokers and Dealers)

American British Chem. Supplies, Inc., 180 Madison Ave.,
N. Y.
American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Arnold Hoffman & Co., 55 Canal St., Providence, R. I.
John H. Calo Co., 19 Rector St., N. Y. 6
Capital City Prods. Co., Columbus 16, O.
Celina Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Works, 41 E. 42nd St., N. Y.
Darling & Co., 4201 S. Ashland Ave., Chicago
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Eastern Industries, Ridgefield, N. J.

Emery Industries, Inc., 4300 Carew Tower, Cincinnati
Falk & Co., Pittsburgh 30
General Mills, Inc., 400 2nd Ave. S., Minneapolis 7, Minn.
Griffin Chem. Co., 1000 16th St., San Francisco
A. Gross & Co., 295 Madison Ave., N. Y.
Otto A. C. Hagen, Public Ledger Bldg., Philadelphia
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Procter & Gamble Co., Cincinnati
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Theobald Industries, Kearny, N. J.
Arthur C. Trask Co., 4108 S. La Salle St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
Wilson-Martin Co., Snyder Ave. & Swanson St.,
Philadelphia
Woburn Chem. Corp., Harrison, N. J.

REFINING EQUIPMENT (Glycerine)

E. B. Badger Co., 25 Pitts St., Boston
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee Associates, 18 South St., Morristown,
N. J.
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago (Used)
Ernest Scott & Co., Fall River, Mass.
Struthers-Wells Co., Warren, Pa.
Walter E. Simmons Co., Boston
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

REFRIGERATING EQUIPMENT

Consolidated Prods. Co., 15 Park Row, N. Y. 38 (Used)
H. Loeb & Son, 4600 Lancaster Ave., Philadelphia
York Ice Machine Co., York, Pa.

REMELTERS

Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Patterson-Kelley Co., East Stroudsburg, Pa.
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc., 5201 Kenwood Ave., Chicago

RESINS, Synthetic

Alkydol Laboratories, Inc., 3242 S. 50th Ave., Cicero, Ill.
American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Atlas Powder Co., Wilmington, Dela.
Bakelite Corp., 300 Madison Ave., N. Y.
Barrett Div., Allied Chem. & Dye Corp., 40 Rector St.,
N. Y.
Crosby Chemicals, Inc., De Ridder, La.
Dow Chemical Co., Midland, Mich.
Durez Plastics & Chemicals, North Tonawanda, N. Y.
General Electric Co., Pittsfield, Mass.
General Mills, Inc., 400 2nd Ave., Minneapolis 1
Hercules Powder Co., Wilmington, Dela.
Koppers Co., Pittsburgh 19
Krumbhaar Chemicals, Inc., South Kearny, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Neville Co., Pittsburgh, Pa.
Pennsylvania Industrial Chemical Corp., Clairton, Pa.
Plaskon Div., Libbey-Owens-Ford Glass Co., Toledo
Reichhold Chemicals, Inc., International Bldg., N. Y. 20
Reilly Tar & Chem. Corp., Indianapolis
Rohm & Haas Co., Resinous Products Div., 222 W.
Washington Sq., Philadelphia
William H. Scheel, Inc., 38 Franklin St., Brooklyn
Schenectady Resins, 200 Congress St., Schenectady, N. Y.
Shell Chemical Corp., 50 W. 50th St., N. Y. 20
U. S. Industrial Chemicals, Inc., Lincoln Bldg., N. Y.
Velsicol Corp., 330 E. Grand Ave., Chicago
Warwick Chemical Co., 1010 44th Ave., L. I. C., N. Y.

RESINS AND VARNISHES, NATURAL (see Gums)

RESPIRATORS

Davis Emergency Equipment Co., 55 Vandam Ave.,
New York
Goggle Parts Co., 1466 W. 9th St., Cleveland 13
Mine Safety Appliances Co., Braddock and Thomas Sts.,
Pittsburgh
Nasal Filter Co., 70 N. 5th St., Columbus, Ohio
Pulmosan Safety Equipment Corp., 644 Pacific St.,
Bklyn. 17
Wilson Products Co., 2nd & Washington Sts.,
Reading, Pa.

RHODINOL (see Aromatic Chemicals)

ROACH PASTE

John Opitz, Inc., 50-14 39th St., L. I. City, N. Y.
Sennewald Drug Co., 2721 Chouteau Ave., St. Louis

ROACH POWDERS (see Household Insecticides, Powder)

ROSE OIL (see Essential Oils)

ROSEMARY OIL (see Essential Oils)

ROSIN

American Turp. Farmers Assn., Valdosta, Ga.
Antwerp Naval Stores Co., Savannah, Ga.
John H. Calo Co., 19 Rector St., N. Y. 6
E. W. Colledge, General Sales Agent, P. O. Box 389,
Jacksonville, Fla.
Continental Turp. & Rosin Corp., Laurel, Miss.
Crosby Chemicals, Inc., De Ridder, La.
Dixie Pine Prods. Co., Hattiesburg, Miss. (wood)
General Mills, Chemical Div., 400 2nd Ave.,
Minneapolis 1
Georgia Rosin Prods. Co., Brunswick, Ga.
Glidden Co., Naval Stores Div., P. O. Box 380,
Jacksonville, Fla.
Hercules Powder Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co.,
230 Park Ave., N. Y.
Newport Industries, Inc., 230 Park Ave., N. Y.
Phoenix Naval Stores Co., Gulfport, Miss. (wood)
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Southern Pine Chem. Co., Box 389, Jacksonville
Taylor, Lowenstein & Co., Mobile, Ala.
Wax & Rosin Prods., 42 Broadway, N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.
G. A. Wharry & Co., 95 Broad St., N. Y. 4

ROSIN SOAPS (Saponified Rosins)

Armour & Co., 1355 W. 31st St., Chicago 9
Boston Chem. Industries, 64 E. Brookline St., Boston 18
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Crosby Chemicals, Inc., DeRidder, La.
Chicago Sanitary Prods. Co., 3100 S. Throop St.,
Chicago 8
Copeland Laboratories, 774 College St., Toronto, Can.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton 1, O.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Haskins Bros. & Co., Omaha
Hercules Powder Co., Wilmington, Del.
National Milling & Chem. Co., 4601 Nixon St., Phila. 27
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Quaker Chemical Prods. Co., Conshohocken, Pa.
Theo. B. Robertson Prods. Co., 700 W. Division St.,
Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Trio Chem. Wks., 341 Scholes St., Bklyn. 6
G. H. Wood & Co., Toronto, Ont., Canada
Woodlets, Inc., Portland, Pa.
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

ROTENONE FORMULATIONS (see also Derris)

Agicide Laboratories, 1717 Taylor Ave., Racine, Wis.
American-British Chem. Supplies, 180 Madison Ave.,
N. Y. 16
Atlas Powder Co., Wilmington, Dela.
California Spray-Chemical Corp., Lucas & Ortho Way,
Richmond, Calif.
Chipman Chem. Co., Bound Brook, N. J.
Derris, Inc., 120 Wall St., N. Y.
Heckathorn & Co., Richmond, Calif.
Jooster & Janssen, 132 Front St., N. Y.
Kay-Fries Chemicals, 180 Madison Ave., N. Y. 16
McCormick & Co., Baltimore, Md.
Miller Prods. Co., 1932 S. W. Water Ave., Portland, Ore.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
J. W. Quinn Drug Co., Greenwood, Miss.
U. S. Indus. Chemicals, Inc., 60 E. 42nd St., N. Y.
Virginia-Carolina Chem. Corp., Richmond 8, Va.
Whitmire Research Corp., 339 Vandeventer, St. Louis

RUG and UPHOLSTERY CLEANERS

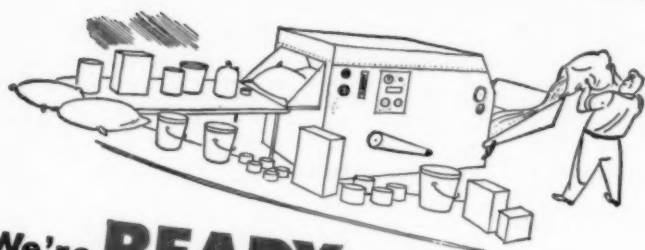
Alrose Chem. Co., Box 1294, Providence, R. I.
American Alcolac Corp., 3440 Fairfield Rd., Balto.
Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
Antara Chemicals, Div. General Dyestuff Corp., 435
Hudson St., N. Y.
Boston Chem. Industries, 64 E. Brookline St., Boston 18
Brilco Labs., 1553—63rd St., Bklyn. 19
Buckingham Wax Corp., aVn Dam St. & Borden Ave.,
L. I. City
Candy & Co., 2515 W. 35th St., Chicago
Carlstadt Chem. Co., Carlstadt, N. J.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service of Balto., Howard & West Sts., Balto.
Chicago Sanitary Prod. Co., 3100 S. Throop St., Chicago 8
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Columbus-Dixon, Inc., 333 E. 23rd St., N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Essential Chem. Co., 2200 N. 32nd St., Milwaukee 8
Fine Organics, Inc., 211 E. 19th St., N. Y. 3
Fuld Bos., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Blue Island, Ill.
Higley Chem. Co., Dubuque, Iowa
Hygiene Products, 169 St. Cyr, Montreal, Canada
Hysan Prods. Co., 932 W. 38th Place, Chicago
Kearny Mfg. Co., Kearny, N. J.
H. Krevit & Co., 73 Welton St., New Haven, Conn.
Kwik Products Co., 451 W. 28th St., N. Y.
Lorenz Chem. Co., 135 N. 22nd Ave., Omaha
M & H Laboratories, 2705 Archer Ave., Chicago
M. Michel & Co., 90 Broad St., N. Y.
Midland Labs., Dubuque, Ia.
Nopco Chem. Co., Harrison, N. J.
Onyx Oil & Chem. Co., Warren & Morris Sts.,
Jersey City 2
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Per-Mo Products Co., 1716 E. 36th St., Kansas City, Mo.
Rex-Cleanwall Corp., 238 S. Murphy Ave., Brazil, Ind.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
I. Schneid, 916 Ashby St., Atlanta, Ga.
Science Industries, 609 Geyer Ave., St. Louis
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Tech Soap Co., S. Chicago & 73rd St., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Trio Chem. Wks., 341 Scholes St., Bklyn.
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 1003 S. California Ave.,
Chicago 12
James Varley & Sons, 1200 Switzer Ave., St. Louis
Washine-National Sands, Inc., 37-02 Northern Blvd.,
Long Island City
Wilco Co., 4425 Bandinni Blvd., Los Angeles

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Woodlets, Inc., Portland, Pa.
Wyandotte Chemicals Corp., J. B. Ford Div.,
Wyandotte, Mich.
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia
Zeen Chemical Co., 2000 Elm St., Cleveland 13

SADDLE SOAP

Armour & Co., 1355 W. 31st St., Chicago
Asco Chemical Co., 641 Lexington Ave., Brooklyn
Baum's Castorine Co., Rome, N. Y.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
R. M. Hollingshead Corp., Camden, N. J.
Hygiene Products, 169 St. Cyr, Montreal, Canada
Hysan Prods. Co., 932 W. 38th Place, Chicago
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Rome Soap Mfg. Co., Rome, N. Y.
E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Tech Soap Mfg. Co., 7310 S. Chicago Ave., Chicago
Windsor Wax Co., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Ont., Canada
Woodlets, Inc., Portland, Pa.

SAL AMMONIAC (see Ammonium Chloride)

SAL SODA

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
John H. Calo Co., 19 Rector St., N. Y. 6
Church & Dwight Co., 70 Pine St., N. Y.
Columbia-Southern Corp., 5th Ave. & Bellefield, Pitts-
burgh
Diamond Alkali Co., 300 Union Commerce Bldg.,
Cleveland 14
E. I. du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Chemical Corp., Baltimore 3
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

SALT (Common Salt)

(see also Dealers)

Columbia-Southern Chem. Corp., 5th Ave. & Bellefield,
Pittsburgh
Dow Chemical Co., Midland, Mich.
International Salt Co., 475 Fifth Ave., N. Y.
LeRoy Salt Co., LeRoy, N. Y.
Michigan Chem. Corp., St. Louis, Mich.
Myles Salt Co., 1007 Camp St., New Orleans, La.
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Pomeroy Salt Co., Pomeroy, Ohio
Remington Salt Co., Ithaca, N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

SALT WATER SOAP (Marine Soaps)

Antiseptol Co., 5524 Northwest Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
Chemical Service Co. of Baltimore, Howard & West Sts.,
Baltimore 30

Chicago Sanitary Prods. Co., 3100 S. Throop St.,
Chicago 8
J. Eavenson & Sons, Camden, N. J.
Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
Hewitt Soap Co., Dayton, O.
Kamen Soap Products Co., 233 Broadway, N. Y. C.
Kearny Mfg. Co., Kearny, N. J.
Los Angeles Soap Co., Los Angeles
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Newell-Guttradt Co., San Francisco
Onyx Oil & Chem. Co., Warren & Morris Sts.,
Jersey City 2
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati, O.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SAMPLE CASES

Arrow Mfg. Co., 15th & Hudson Sts., Hoboken, N. J.
Knickerbocker Case Co., 2311 N. Crawford Ave., Chicago

SAND URNS

Atlantic Stamping Co., Rochester, N. Y.
Atlas Prods. Co., 3825 S. Racine Ave., Chicago
Compeco Corp., 2251 W. St. Paul Ave., Chicago 47
Ex-Cell Prods. Corp., 1233 S. Wabash Ave., Chicago 5
Franklin Metal Prods. Co., 1500-02 S. Wabash Ave.,
Chicago
F. H. Lawson Co., 800 Evans St., Cincinnati 4, O.
Rochester Can Co., 8 Greenleaf St., Rochester 9, N. Y.

SANDALWOOD OIL (see Essential Oils)

SASSAFRAS, Artificial (see Aromatic Chemicals)

SAWDUST (see listings under Wood Flour)

SCALES (see Weighing Equipment)

SCOURING POWDERS

American Soap & Washoline Co., Cohoes, N. Y.
Ampon Corp., 4-88 47th Ave., Long Island City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
B. T. Babbitt, Inc., 386-4th Ave., N. Y. 16
Britex Corp., 17 Lewis Wharf, Boston 10
Buck-Jack Co., 3056 Federal St., Baltimore
Chemical Mfg. & Distrib. Co., Easton, Pa.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clarkson Laboratories, 919 N. 9th St., Phila. 23
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Columbia-Southern Chem. Corp., Pittsburgh
Crystal Soap & Chem. Co., 6300 State Rd., Phila.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati O.
Eagle Soap Corp., Huntington, Ind.
Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
Fuld Bros., 702 S. Wolfe St., Baltimore
Higley Chem. Co., Dubuque, Iowa
Hygiene Products, 169 St. Cyr, Montreal, Canada
Hysan Prods., 932 W. 38th Place, Chicago
Kearny Mfg. Co., Kearny, N. J.
Los Angeles Soap Co., 617 E. First St., Los Angeles
Midland Labs., Dubuque, Ia.
Murro Chemical Co., Asheville, N. C.
National Milling & Chem. Co., 4601 Nixon St., Phila. 24
Pacific Chem. Co., 1412 N. Main St., Los Angeles
J. C. Paul & Co., 8140 N. Ridgeway Ave., Skokie, Ill.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., Widener Bldg., Philadelphia
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., 209 Peters St., S.W., Atlanta
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.

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in the
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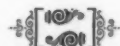
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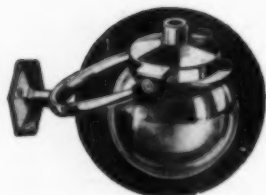
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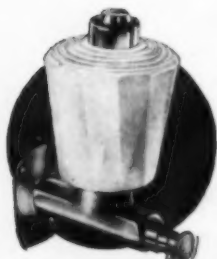
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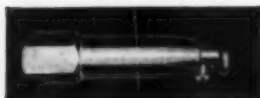


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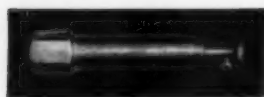
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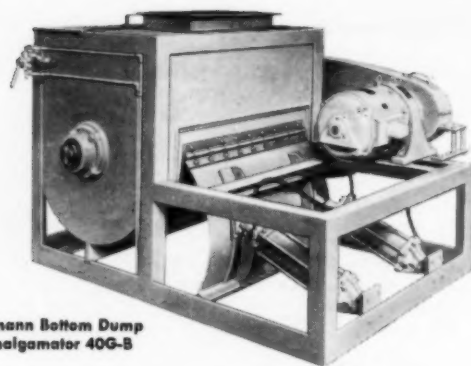
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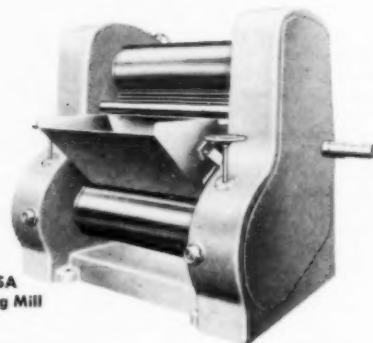
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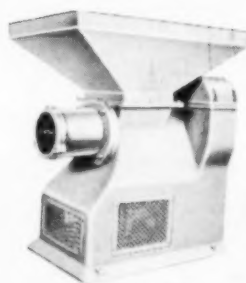
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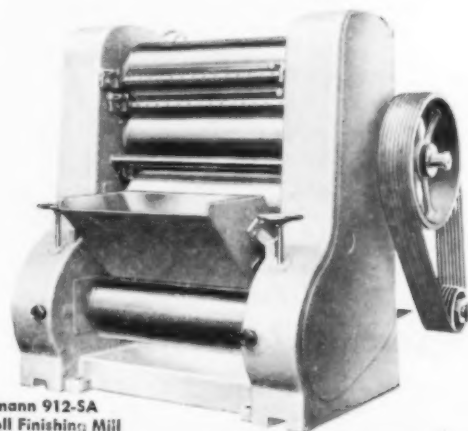
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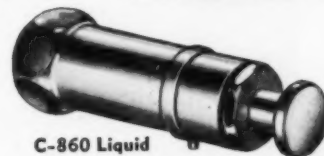
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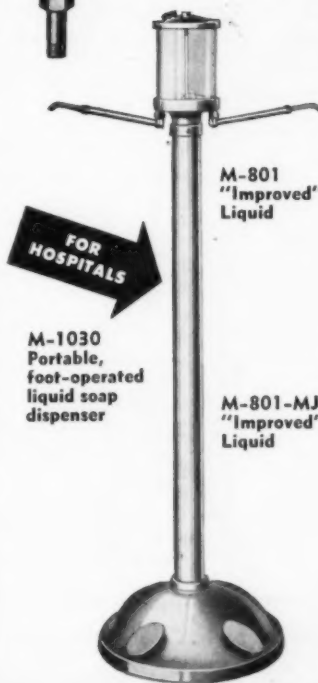
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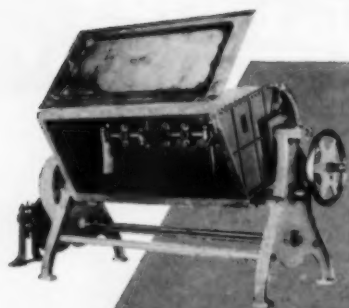
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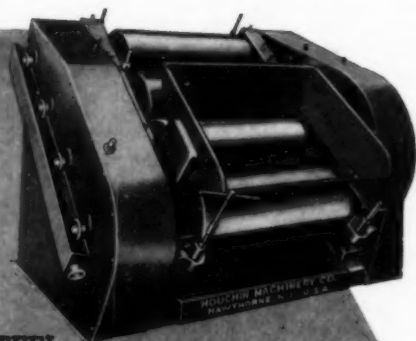
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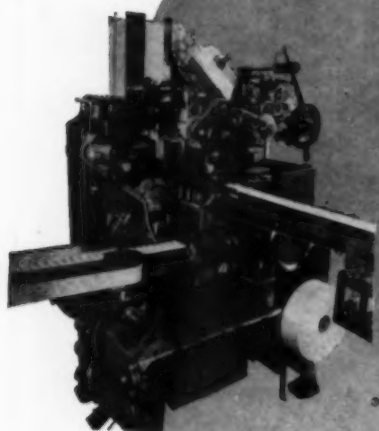
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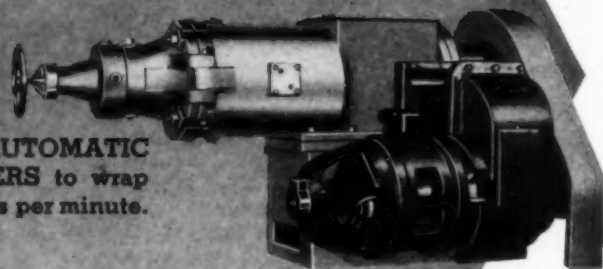
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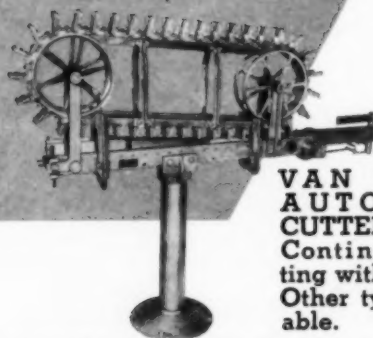
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Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
Perry Bros., Inc., 220 Flushing Ave., Brooklyn
Polak & Schwartz, Inc., 667 Washington St., N. Y.
Polak's Frutal Works, Middletown, N. Y.
Polaroma Co., 73 Sullivan St., N. Y. C.
F. Ritter & Co., 4001 Goodwin Ave., Los Angeles 39
Roubechez, Inc., 8 E. 12th St., New York
Roure-Dupont, Inc., 366 Madison Ave., N. Y.
Edwin Seebach Co., 912 Broadway, N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Tennessee Eastman Corp., Kingsport, Tenn.
Seeley & Co., Nyack, N. Y.
Synfleur Scientific Labs., Monticello, N. Y.
Syntomatic Corp., 114 E. 32nd St., N. Y.
Tombarel Prods. Corp., 12 E. 22nd St., N. Y.
Ungerer & Co., 161 Sixth Ave., N. Y.
van Ameringen-Haebler, Inc., 521 W. 57th St., N. Y. 19
Albert Verley, Inc., 440 W. Superior St., Chicago
Verona Chem. Corp., 26 Verona Ave., Newark, N. J.

SOAP PLANTS (Continuous Process)

E. I. du Pont de Nemours & Co., Wilmington, Dela.
(Methylation Process)
Emery Industries, Carew Tower, Cincinnati, O. (High
Pressure Saponification Process)
Refining Unincorporated, 70 W. 40th St., N. Y. 18
Sharples Corp., 23rd & Westmoreland Sts., Phila. 40
(Process Employing Centrifugals for the Production of
Neat Soap)

SOAP PLANTS (Engineering)

Alan Porter Lee Associates, 18 South St.,
Morristown, N. J.
J. W. McCutcheon, 475 Fifth Ave., N. Y.
Project Construction Corp., 39 Broadway, N. Y. 6
Soap Consultants, Inc., 7 Coolidge Ave., Boston
Wurster & Sanger, 5201 S. Kenwood Ave., Chicago

SOAP POWDER MILLS

Abbe Engineering Co., 50 Church St., N. Y.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 359 46th St., Brooklyn, N. Y.
J. M. Lehmann Co., 566 New York Ave., Lyndhurst, N. J.
Newman Tallow & Soap Mach. Co., 1051 W. 35th,
Chicago (Used)
Prafer Pulverizing Co., 1825 55th Ave., Chicago
Chas. Ross & Son Co., 148 Classon Ave., Bklyn. 5

SOAP, POWDERED (White neutral powdered soap, powdered castile soap, etc., 95-99 per cent anhydrous soap. Do not confuse with Soap Powders.)

Armour & Co., 1355 W. 31st St., Chicago
Chem. Mfg. & Dist., Co., Easton, Pa.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Eagle Soap Corp., Huntington, Ind.
Essential Chemicals Co., 2200 N. 32nd St.,
Milwaukee 8
J. Eavenson & Sons, Camden, N. J.
Hygiene Products, 169 St. Cyr, Montreal, Canada
Kranich Soap Co., 60 Richards St., Brooklyn, N. Y.
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Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
Prentiss Drug & Chem. Co., 110 William St., N. Y.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Standard Soap Co., Camden, N. J.
Sugar Beet Prod. Co., Saginaw, Mich.
Swift & Co., Chicago 9
Tennessee Soap Co., 1702 N. Thomas Ave., Memphis 1, Tenn.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
G. H. Wood & Co., Toronto, Ont., Canada
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SOAP POWDERS

(Do not confuse with pure powdered soaps)

American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 4-88 47 Av., Long Island City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Britex Corp., 17 Lewis Wharf, Boston 10
Chicago Sanitary Prods., Co., 3100 S. Throop Ave., Chicago 8
Cowles Chemical Co., 7016 Euclid Ave., Cleveland
Chemical Mfg. & Dist. Co., Easton, Pa.
Copeland Laboratories, 774 College St., Toronto, Can.
Cudahy Packing Co., 221 N. La Salle St., Chicago
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Du Bois Soap Co., Cincinnati
East Coast Soap Corp., 89 Coffey St., Bklyn. 31
J. Eavenson & Sons, Camden, N. J.
Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City
Hewitt Soap Co., Dayton, O.
R. M. Hollingshead Corp., Camden, N. J.
Klix Chem. Co., 2460 Third St., San Francisco
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Los Angeles Soap Co., 617 E. First St., Los Angeles
Midland Laboratories, Dubuque, Iowa
Miranol Chem. Co., 16 Melville Pl., Irvington, N. J.
Murro Chemical Co., Asheville, N. C.
National Southern Products, Tuscaloosa, Ala.
National Milling & Chem. Co., 4601 Nixon St., Phila. 27
Nopco Chemical Co., Harrison, N. J.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
S. & S. Soap Co., 324 Barretto St., Bronx, N. Y.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Stevens Soap Corp., 200 Sullivan St., Brooklyn
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Tennessee Soap Co., 1702 N. Thomas Ave., Memphis 1, Tenn.
U. S. Sanitary Specialties Corp., 1001 S. California Blvd., Chicago 12
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
G. H. Wood & Co., Toronto, Ont., Canada
Woodlets, Inc., Portland, Pa.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Wyandotte Chemicals Corp., J. B. Ford Div., Wyandotte, Mich.
Chas. W. Young & Co., Phila.

SOAP PRESSES (see Presses)

SOAP SHEETS (see Soap Paper)

SOAP SOLUTIONIZING DEVICES (Solutionizing and dispensing devices for soaps and detergents)

Clifton Chemical Co., 62 William St., N. Y.
Davies-Young Soap Co., Dayton, O.
Independent Specialties, 152 W. 75th St., Chicago

Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Piatt & Smillie Chemicals, 2329 Pine St., St. Louis
U. S. Sanitary Specialties Corp., 1001 S. California Blvd., Chicago 12

SOAP SLABBERS (see Soap Machinery)

SOAP STOCK (Boiled down cotton oil soap stock, etc.)

(see also Brokers and Dealers)

Archer-Daniels-Midland Co., Minneapolis 2
Brode Corp., Memphis, Tenn.
T. G. Cooper & Co., Cedar and Venango Sts., Phila.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Falk & Co., Pittsburgh 30
Wm. H. Floyd & Co., Los Angeles
H. Hentz & Co., 60 Beaver St., N. Y.
Portsmouth Cotton Oil Refining Co., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
Southern Cotton Oil Co., 21 West St., N. Y.
A. E. Staley Mfg. Co., Decatur, Ill.
Swift & Co., Chicago 9
Tennessee Soap Co., 1702 N. Thomas Ave., Memphis 1, Tenn.
Welch, Holme & Clark Co., 439 West St., N. Y.

SOAP VALVES (see Soap Dispensing Systems)

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Piatt & Simillie Chemicals, 2329 Pine St., St. Louis 3
Tech Soap Mfg. Co., 7310 S. Chicago Ave., Chicago
Uncle Sam Chem. Co., 575 W. 131st St., N. Y. 27
Allen B. Wrisley Co., 6801 W. 56th St., Chicago

SOAPS, AUTO (see Potash Soaps)

SOAPS, FLOATING (see Floating Soaps)

SOAPS, GRANULATED (see Laundry Soaps, Granulated)

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SOAPS, MEDICINAL, CAKE (see Medicinal Soaps, Cake)

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SOAPS, SURGICAL (see Potash Soaps)

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Columbia-Southern Chem. Corp., 5th Ave. & Bellefield,
Pittsburgh
Diamond Alkali Co., 300 Union Commerce Bldg.,
Cleveland 14
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Mathieson Chemical Corp., Baltimore 3
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Chas. Page & Co., 50 E. 42nd St., N. Y. 17
E. I. du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Penn Salt Mfg. Co., Widener Bldg., Phila.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Virginia-Carolina Chem. Corp., Richmond, Va.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chem. Div., Food Machy. & Chem. Corp.,
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Wyandotte, Mich.

SODA (Modified)

(see also Dealers)

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Mathieson Chemical Corp., Baltimore 3
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Virginia-Carolina Chem. Corp., Richmond, Va.
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chemicals Corp., J. B. Ford Div.,
Wyandotte, Mich.

SODIUM ACID SULFATE (see Nitre Cake)

SODIUM ALGINATE

Algin Corp. of America, 24 State St., N. Y.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Innis, Speiden & Co., 117 Liberty St., N. Y. 6
Kelco Co., 31 Nassau St., N. Y.

SODIUM ARSENITE

Chipman Chem. Co., Bound Brook, N. J.
Geigy Co., 89 Barclay St., New York
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Merck & Co., Rahway, N. J.
Penn Salt Mfg. Co., Widener Bldg., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Shepherd Chem. Co., Cincinnati 12, O.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.

SODIUM BENZOATE

J. T. Baker Chem. Co., Phillipsburg, N. J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, N. J.
Heyden Chem. Corp., 393 7th Ave., N. Y.
Hooker Electrochem. Co., Niagara Falls, N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y. 6
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Seydel Chem. Co., 225 Mercer St., Jersey City, N. J.

SODIUM BICARBONATE

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Church & Dwight Co., 70 Pine St., N. Y.

Columbia-Southern Chem. Corp., 5th Ave. & Bellefield,
Pittsburgh
Diamond Alkali Co., 300 Union Commerce Bldg.,
Cleveland 14
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Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
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Pennsylvania Salt Mfg. Co., Widener Bldg., Philadelphia
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Jos. Turner & Co., Ridgefield, N. J.
Virginia-Carolina Chem. Corp., Richmond 8, Va.
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
Wyandotte, Mich.

SODIUM BICHROMATE

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
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Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
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Mallinckrodt Chem. Co., 2nd & Mallinckrodt Sts.,
St. Louis 7
Merck & Co., Rahway, N. J.
Mutual Chemical Co., 270 Madison Ave., N. Y.
Natural Products Refining Co., 900 Garfield Ave.,
Jersey City, N. J.
Chas. Page & Co., 50 E. 42nd St., N. Y. 17
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y. 14

SODIUM BISULFATE (see Nitre Cake)

SODIUM CARBONATE (see Soda Ash)

SODIUM CHLORATE

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Chipman Chem. Co., Bound Brook, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Mallinckrodt Chem. Co., 2nd & Mallinckrodt Sts.,
St. Louis 7
Merck & Co., Rahway, N. J.
Oldbury Electrochem. Co., 22 E. 40th St., N. Y.
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Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Western Electrochem. Co., Los Angeles 23, Calif.

SODIUM CHLORIDE (see Salt, Common Salt)

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American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
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SODIUM FLUORIDE (see Fluorides)

SODIUM FLUOSILICATE (see Sodium Silicofluoride)

SODIUM HYDROSULFITE

J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Dyestuff Corp., 435 Hudson St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Wks., St. Louis 7
Merck & Co., Rahway, N. J.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Royce Chemical Co., Carlton Hill, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y. 14
Jacques Wolf, Passaic, N. J.

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General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
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Mallinckrodt Chem. Wks., St. Louis
Merck & Co., Rahway, N. J.
Rohm & Haas, 222 W. Washington Sq., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Virginia Smelting Co., W. Norfolk, Va.
Welch, Holme & Clark Co., 439 West St., N. Y. 14

SODIUM LAURYL SULFATE (see Sulfated Fatty Alcohols)

SODIUM METAPHOSPHATE

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Griffin Chemical Co., 1000 16th St., San Francisco
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Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Rumford Co., Rumford 16, R. I.
Victor Chem. Wks., 141 W. Jackson, Chicago

SODIUM METASILICATE

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Cowles Chemical Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., 300 Union Commerce Blvd., Cleveland 14
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Emeryville Chem. Co., 405 Montgomery St., San Francisco
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y. 6
Innis, Speiden & Co., 117 Liberty St., N. Y. 6
Philadelphia Quartz Co., Public Ledger Bldg., Phila. 6
Virginia-Carolina Chem. Corp., Richmond 5, Va.
Welch, Holme & Clark Co., 439 West St., New York

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Dow Chemical Co., Midland, Mich.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Phila.

SODIUM PERBORATE

(see also Dealers)

Croton Chem. Corp., 114 Liberty St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chem. Wks., 2nd & Mallinckrodt Sts., St. Louis 7
Merck & Co., Rahway, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y. 14

SODIUM PHOSPHATES (see also Sodium Metaphosphate; Sodium Triphosphate; Tetrasodium Pyrophosphate, Trisodium Phosphate, etc.)

Blockson Chemical Co., Joliet, Ill.
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y. 6
A. R. Maas Chemical Co., 4570 Ardine St., South Gate, Cal.
Monsanto Chemical Co., St. Louis
Rumford Co., Rumford 16, R. I.
Victor Chemical Wks., 141 W. Jackson St., Chicago
Virginia-Carolina Chem. Corp., Richmond, Va.
Westvaco Chemical Div., Food Machinery & Chem. Corp., 405 Lexington Ave., N. Y. 17

SODIUM PYROPHOSPHATE (see Tetrasodium Pyrophosphate)

SODIUM SESQUICARBONATE

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Mathieson Chemical Corp., Baltimore 3
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Virginia-Carolina Chemical Corp., Richmond, Va.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 415 Lexington Ave., N. Y. 17

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American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Cowles Chemical Co., 7016 Euclid Ave., Cleveland
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Innis, Speiden & Co., 117 Liberty St., N. Y.
Philadelphia Quartz Co., Public Ledger Bldg., Phila. 6
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Solvay Sales Division, Allied Chemical & Dye Corp., 40 Rector St., N. Y. 6
Jqs. Turner & Co., Ridgfield, N. J.
Virginia-Carolina Chem. Corp., Richmond 8, Va.
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div., Wyandotte, Mich.

SODIUM SILICATE

(see also Dealers)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14
E. I. du Pont de Nemours & Co., Wilmington, Del.
Emeryville Chem. Co., 405 Montgomery St., San Francisco
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Philadelphia Quartz Co., Public Ledger Bldg., Phila. 6
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
Virginia-Carolina Chem. Corp., Richmond 5, Va.
Welch, Holme & Clark Co., 439 West St., N. Y.

SODIUM SILICOFLOURIDE

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American Fluoride Corp., 151 W. 19th St., N. Y.
Armour Fertilizer Wks., Atlanta, Ga.
Blockson Chemical Co., Joliet, Ill.
Croton Chem. Corp., 114 Liberty St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
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General Chemical Div., Allied Chemical & Dye Corp.,
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A. R. Maas Chemical Co., 4570 Ardine St., South Gate,
Calif.
Monsanto Chem. Co., St. Louis 4
Victor Chemical Wks., 141 W. Jackson, Chicago
Virginia-Carolina Chem. Corp., Richmond 8, Va.
Welch, Holme & Clark Co., 439 West St., N. Y. 19
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S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
John H. Calo Co., 19 Rector St., N. Y. 6
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Commerce Petroleum Co., 2923 Lock St., Chicago
Gulf Oil Corp., Pittsburgh 30
Koppers Co., Koppers Bldg., Pittsburgh
Neville Co., Pittsburgh
Chas. Page & Co., 50 E. 42nd St., N. Y. 17
Pennsylvania Refining Co., Butler, Pa.
Reilly Tar & Chemical Corp., Indianapolis
Skelly Oil Co., 605 W. 47th St., Kansas City, Mo.
Sinclair Refining Co., East Chicago, Ind.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Tar Residuals, Inc., 420 Lexington Ave., N. Y.
Velsicol Corp., 330 E. Grand Ave., Chicago

SOLVENTS (Chlorinated, also alcohols, coal tar derivatives, etc.)

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Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Crosby Chemicals, Inc., De Ridder, La.
Diamond Alkali Co., Cleveland 14
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Enjay Co., 15 W. 51st St., N. Y.
Hercules Powder Co., Wilmington (Terpene)
Hooker Electrochemical Co., Niagara Falls, N. Y.
Jefferson Chemical Co., 711 Fifth Ave., N. Y.
Kessler Chem. Corp., Philadelphia
Koppers Co., Koppers Bldg., Pittsburgh
Michigan Chemical Corp., St. Louis, Mich.
Monsanto Chemical Co., 1700 2nd St., St. Louis
Neville Co., Pittsburgh
Newport Industries, 230 Park Ave., N. Y.
Penna. Industrial Chem. Corp., Clairton, Pa.

Pennsylvania Refining Co., Butler, Pa.
Reilly Tar & Chemical Corp., Indianapolis
Shell Chemical Corp., 50 W. 50th St., N. Y. 18
Skelly Oil Co., Kansas City
Solvay Sales Div., 40 Rector St., N. Y. 6
Tennessee Eastman Co., Kingsport, Tenn.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.
Velsicol Corp., 330 E. Grand Ave., Chicago
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405
Lexington Ave., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
Wyandotte, Mich.

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Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington
Enjay Co., 15 W. 51st St., N. Y. 19
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

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Anderson-Prichard Oil Co., Oklahoma City, Okla.
Atlantic Refining Co., 260 S. Broad St., Philadelphia
John H. Calo Co., 19 Rector St., N. Y. 6
Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Central Solvents & Chemicals Co., 2545 W. Congress St.,
Chicago 12
Commerce Petroleum Co., 2923 Lock St., Chicago
Gulf Oil Corp., Pittsburgh 30
Neville Co., Pittsburgh 25
Oil States Pet. Co., 233 Broadway, N. Y.
Penna. Industrial Chem. Corp., Clairton, Pa.
Pennsylvania Refining Co., Butler, Pa.
Phillips Petroleum Co., Chemical Prods. Dep., Bartles-
ville, Okla.
Shell Oil Co., 50 W. 50th St., N. Y.
Sinclair Refining Co., 630 5th Ave., N. Y.
Skelly Oil Corp., 605 W. 47th St., Kansas City, Mo.
L. Sonneborn Sons, 300—4th Ave., N. Y. 10
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
Velsicol Corp., 330 Grand Ave., Chicago

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(see also Brokers and Dealers)

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Balfour, Guthrie Co., 67 Wall St., N. Y.
Irving R. Boody & Co., 120 Wall St., N. Y.
John H. Calo Co., 19 Rector St., N. Y. 6
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Inc., Ridgefield, N. J.
Falk & Co., Pittsburgh 30
General Mills, Chemical Div., 400 2nd Ave., Minneapolis 1
William O. Goodrich Co., Milwaukee, Wis.
W. R. Grace & Co., 7 Hanover Sq., N. Y.
Hasselman, Seaman, de Ryss, Inc., 347 Madison Ave.,
N. Y. 17
Spencer Kellogg & Son, Buffalo, N. Y.
Leghorn Trading Co., 21 West St., N. Y.
Pacific Vegetable Oil Co., 62 Townsend St., San Francisco
Purina Mills, St. Louis
Robinson Wagner Co., 110 E. 42nd St., N. Y.
A. E. Staley Mfg. Co., Decatur, Ill.
Swift & Co., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
G. A. Wharry & Co., 95 Broad St., N. Y. 4

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Armour & Co., 1355 W. 31st St., Chicago
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Emery Industries, 4300 Carew Tower, Cincinnati 2
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The new 31G is a continuous-type sprayer with galvanized tank and pump equipped with a patented atomizing whirl-spray nozzle. Two-quart tank is fitted with new, no-leak cap. Pump features a positive-action air check valve.

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The Dobbins No. 43G is a three-quart continuous sprayer with lever-controlled shut-off valve. Galvanized tank and pump featuring a whirling brass spray cap, with strainer. Handles oil sprays, chemicals and other sediment-free solutions smoothly and forcefully.

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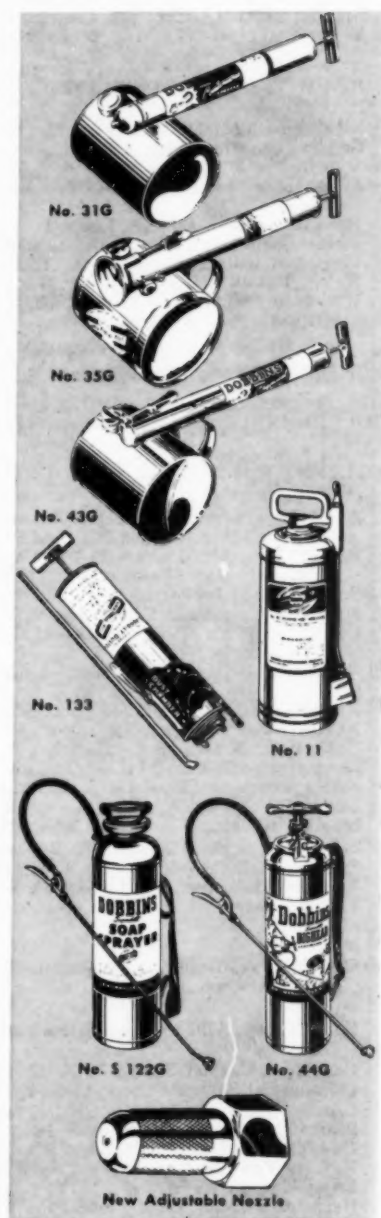
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Woburn Chemical Corp., Harrison, N. J.

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Allied Industrial Prods. Co., 620 N. Michigan, Chicago
American Sponge & Chamois Co., 47 Ann St., N. Y.
American Standard Mfg. Co., 2509 S. Green St., Chicago
Atlas Sponge Co., 291 Church St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington (Cellulose)
Florida Sponge & Chamois Co., 42 Cliff St., N. Y.
Great Eastern Sponge & Chamois Co., 233 N. Catt. Pk.
Ave., Baltimore
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Robinson Sponge Co., 1805 Atlantic Ave., Brooklyn

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SPOUTS (see Can Spouts, Closures)

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Calmar Co., 6800 McKinley Ave., Los Angeles, Calif.
Federal Tool Corp., 3600 S. Pratt Blvd., Chicago 45
H. D. Hudson Mfg. Co., 549 E. Illinois St., Chicago 11
Uncle Sam Chem. Co., 575 W. 131st St., N. Y. 27
Wilco Co., 4425 Bandinni Blvd., Los Angeles 23

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Binks Mfg. Co., 3114 Carroll Ave., Chicago
E. C. Brown Co., Rochester, N. Y.
Champion Sprayer Co., 6523 Heintz Ave., Detroit 11
R. E. Chapin Mfg. Co., Batavia, N. Y.
DeVilbiss Co., Toledo, O.
Dobbins Mfg. Co., Elkhart, Ind.
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Fumeral Co., Racine, Wis. (built in systems)
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Imperial Brass Co., 1237 W. Harrison St., Chicago
Kearny Mfg. Co., Kearny, N. J.
Lofstrand Co., Rockville, Md.
Lowell Mfg. Co., 589 E. Illinois St., Chicago
Piezo Mfg. Corp., 110 E. 42nd St., N. Y.
Simmon Paint Spray Brush Co., Dayton, O.
Spraying Systems Co., 3266 Randolph St., Bellwood, Ill.
Universal Metal Prods. Co., Lowell, Mich.
Volume Sprayer Mfg. Co., Tulsa, Okla.

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Binks Mfg. Co., 3114 Carroll Ave., Chicago
Breuer Elect. Mfg. Co., 5100 N. Ravenswood Ave.,
Chicago 40
DuLa Mfg. Co., 351 Atlantic Ave., Brooklyn, N. Y.
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Fumeral Co., Racine, Wis.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago
Lowell Mfg. Co., 589 E. Illinois St., Chicago
Piezo Mfg. Corp., 110 E. 42nd St., N. Y.
Z & W Machine Prods., 5151 St. Clair Ave., Cleveland 14

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DuLa Mfg. Co., 351 Atlantic Ave., Brooklyn
Electric Sprayit Co., Sheboygan, Wis.
Fumeral Co., Racine, Wis.
Hydro-Mist Div., Arnold Laboratories, 1515 W. Glenoaks
Blvd., Glendale, Calif.
Lowell Mfg. Co., North Pier Terminal, Chicago
Madewell Products Inc., 3125 E. 7th St., Oakland, Calif.

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Sudden Death to

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UP TO 80% CHEAPER One filling of 44 oz. of approved insecticide will treat a minimum of 500,000 cubic feet of space. Once the controls are set, no manual attendance is required. Compared to aerosol, hand sprayers or other similar applicators, Hydro-Mist saves up to 80% on insecticide costs.

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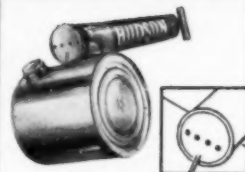
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Hudson Nebulizers in ½ pt., pt., qt. and 2 qt. sizes. Fine floating cloud from 4-jet nozzle knocks down 20% more flies . . . kills 25% more of them. Look for the 4 jets.

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Give it the perfect "team-mate"
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Fewer Strokes Put Out More
Spray With Finer Particles

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KNOCKDOWN†

MUCH GREATER

KILL†



† *Tested and Proved in
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Z & W Machine Prods., 5151 St. Clair Ave., Cleveland 14

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A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Hanson Chemical & Equipment Co., Beloit, Wis.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago
Hardie Mfg. Co., Hudson, Mich.
Hurst Industries, Inc., 1849 S. 1st St., San Jose, Cal.
F. E. Myers & Brothers Co., Ashland, O.
Oberdorfer Foundries, Inc., 5100 Thompson Rd., Syracuse
Silver Creek Precision Co., Silver Creek, N. Y.
Victor Products Corp., Ransom, W. Va.

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Bete Fog Nozzle Co., Greenfield, Mass.
H. D. Hudson Mfg. Co., 549 E. Illinois St., Chicago 11
Lofstrand Co., Rockville, Md.
Monarch Mfg. Works, 3406 Miller St., Phila.
Spraying Systems Co., 3217 Randolph St., Bellwood, Ill.

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J. W. McCutcheon, 475 Fifth Ave., N. Y.
Swenson Evaporator Div., Whiting Corp., Whiting, Ill.
Wurster & Sanger, 5201 S. Kenwood Ave., Chicago

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Fumeral Co., Racine, Wisc.
H. D. Hudson Mfg. Co., 549 E. Illinois St., Chicago 11
Virginia Smelting Co., West Norfolk, Va.
Z & W Machine Prods., 5151 St. Clair Ave., Cleveland 14

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A. F. Dormeyer Mfg. Co., 4316 N. Kilpatk. St., Chicago
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Warren Haviland Corp., 1810 Chouteau Ave., St. Louis 3
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
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Reliance Hardware & Mfg. Co., 1438 N. Keating St., Chicago
White Mop Wringer Co., Fultonville, N. Y.

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Uncle Sam Chem. Co., 575 W. 131st St., N. Y. 27
York Chem. Co., 23 Dean St., Brooklyn, N. Y.

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STARCH

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T. G. Cooper & Co., 117 Liberty St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Keever Starch Co., Columbus, O.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
National Starch Prods., 270 Madison Ave., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y. 10
L. A. Salomon & Bro., 216 Pearl St.
A. F. Staley Mfg. Co., Decatur, Ill.
Welch, Holme & Clark Co., 439 West St., N. Y.

STEARATES (Zinc, Calcium, Magnesium, etc.)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Antara Chemicals, Div. General Dyestuff Corp., 435 Hudson St., N. Y.
Atlas Powder Co., Wilmington, Del.
Cuprinol Inc., 7 Water St., Boston
E. I. du Pont de Nemours & Co., Wilmington, Del.
Glyco Prods. Co., 26 Court St., Brooklyn 2
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
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Innis, Speiden & Co., 117 Liberty St., N. Y.
Kessler Chem. Co., State Rd., Phila. 35 (Glyceryl, Glycol)
Mallinckrodt Chem. Wks., St. Louis
Merck & Co., Rahway, N. J.
Metasap Chem. Co., First & Essex Sts., Harrison, N. J.
M. W. Parsons, Inc., 59 Beekman St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Hans Tobason, 33 Rector St., N. Y. 6
Jos. Turner & Co., Ridgefield, N. J.
Warwick Chemical Co., 10-10 44th Ave., L. I. C. 1, N. Y.
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Witco Chemical Co., 295 Madison Ave., N. Y.

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Armour & Co., 1355 W. 31st St., Chicago
Atlas Powder Co., Wilmington, Del.
E. A. Bromund Co., 258 Broadway, N. Y. 7
John H. Calo Co., 19 Rector St., N. Y. 6
Celina Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Wks., 41 E. 42nd St., N. Y.
Concord Chem. Co., Moorestown, N. J.
Darling & Co., 4201 S. Ashland Ave., Chicago
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
General Mills, Chemical Div., 400 2nd Ave., Minneapolis 1
A. Gross & Co., 295 Madison Ave., N. Y.
Griffin Chem. Co., 1000 16th St., San Francisco
Hardesty & Co., 60 E. 42nd St., N. Y.
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Innis, Speiden & Co., 117 Liberty St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
F. W. Steadman Co., 59 Pearl St., N. Y. 4
Swift & Co., Chicago 9
Theobald Industries, Kearny, N. J.
Arthur C. Trask Co., 4103 S. LaSalle St., Chicago 9
Welch, Holme & Clark Co., 439 West St., N. Y.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.
Will & Baumer Candle Co., Syracuse, N. Y.
Wilson-Martin Co., Snyder Ave., & Swanson St., Phila.
Witco Chemical Co., 295 Madison Ave., N. Y.
Woburn Chemical Corp., Harrison, N. J.

STEARINE

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Armour & Co., 1355 W. 31st St., Chicago
E. A. Bromund Co., 258 Broadway, N. Y. 7
John H. Calo Co., 19 Rector St., N. Y. 6
Celina Stearic Acid Co., Celina, Ohio
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Durkee Famous Foods, Inc., 2670 Elston Av., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati

STEARINE (Contd.)

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A. Gross & Co., 295 Madison Ave., N. Y. 17
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Morris Co., Union Stock Yards, Chicago
Pacific Vegetable Oil Corp., 62 Townsend St.,
San Francisco
Procter & Gamble Co., Cincinnati
Swift & Co., Union Stock Yards, Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
Wilson & Co., 4100 Ashland Ave., Chicago
G. S. Ziegler & Co., 99 Church St., N. Y.
Zophar Mills, Inc., 112 26th St., Brooklyn, N. Y.

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Armour & Co., 1355 W. 31st St., Chicago
John H. Calo Co., 19 Rector St., N. Y. 6
Darling & Co., 4201 S. Ashland Ave., Chicago
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
General Mills, Chem. Div., 400 2nd Ave., Minneapolis 1
A. Gross & Co., 295 Madison Ave., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Pennotex Oil Corp., 29 Broadway, N. Y. 6
Procter & Gamble Co., Ivorydale, O.
Swift & Co., Chicago 9
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Wilson & Co., 4100 Ashland Ave., Chicago
G. S. Ziegler & Co., 99 Church St., N. Y.

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STEEL DRUMS (see Drums, Steel)

STEEL DRYING ROLLS see Chilling Rolls

STEEL PAILS (see Pails, Steel)

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International Nickel Co., 67 Wall St., N. Y.
Lukens Steel Co., Coatesville, Pa.
Republic Steel Corp., Republic Bldg., Cleveland, O.

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International Steel Wool Co., Springfield, Ohio
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Williams Co., London, Ohio

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STODDARD'S SOLVENT (see Solvents, Petroleum)

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SUDSING EQUIPMENT (see Soap Solutionizing Devices)

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Archer-Daniels-Midland Co., Minneapolis 2
Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.

Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
E. I. du Pont de Nemours Co., Wilmington, Del.
Emulsol Corp., 59 E. Madison St., Chicago
Hummel Chemical Co., 90 West St., N. Y.
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
M. Michel & Co., 90 Broad St., N. Y.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
National Aniline Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Nopco Chemical Co., Harrison, N. J.
Onyx Oil & Chemical Co., Warren & Morris Sts.,
Jersey City 2
Procter & Gamble Co., Cincinnati
Robinson Wagner Co., 110 E. 42nd St., N. Y.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
Stepan Chem. Co., 1353 N. Branch St., Chicago 22
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
U. S. Industrial Chems., Inc., 60 E. 40th St., N. Y.
Welch, Holme & Clarke Co., 439 West St., N. Y. 19
Jacques Wolf & Co., Passaic, N. J.

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Atlantic Refining Co., 260 S. Broad St., Phila.
Burkhart-Schirr Chem. Co., Chattanooga 2, Tenn.
Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Colloids, Inc., 395 Frelinghuysen Ave., Newark, N. J.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, 4300 Carew Tower, Cincinnati
Hercules Powder Co., Wilmington
Nopco Chem. Co., Harrison, N. J.
Onyx Oil & Chemical Co., Warren & Morris Sts.,
Jersey City 2
Salem Oil & Grease Co., Salem, Mass.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
L. Sonneborn Sons, 300—4th Ave., N. Y. 10
Stepan Chem. Co., 1353 N. Branch St., Chicago 22
Swift & Co., Chicago 9
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
Jacques Wolf & Co., Passaic, N. J.

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Jacques Wolf & Co., Passaic, N. J.

SULFUR CANDLES

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Reliable Chemical Co., Passaic, N. J.

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E. F. Drew & Co., 15 E. 26th St., N. Y. 10
Kessler Chemical Co., State Road, Phila. 35
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
M. Michel & Co., 90 Broad St., N. Y.
Nopco Chem. Co., Harrison, N. J.
Pfaltz & Bauer, 350 5th Ave., N. Y.
Pylam Products Co., 799 Greenwich St., N. Y.
Robinson Wagner Co., 110 E. 42nd St., N. Y.
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Pacific Chem. Co., 1421 N. Main St., Los Angeles
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Riverside Chem. Co., N. Tonawanda, N. Y.
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Sanco Prods. Inc., Greenville, O.
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Savin Products Co., 1221 Dorchester Ave., Boston 25
E. B. Snyder Co., 2137 E. Harold St., Philadelphia
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Sweeping Compound Mfrs. Co., 421 Broome St., N. Y.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
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G. H. Wood & Co., P. O. Box 34, Toronto, Ont., Canada

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SYNTHETIC RESINS (see Resins, Synthetic)

SYNTHETIC WAXES (see Waxes, Synthetic)

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Falk & Co., Pittsburgh 30
General Mills, Chemical Div., 400 2nd Ave., Minneapolis
Gulf States Paper Co., Tuscaloosa, Ala.
National Southern Products Corp., Tuscaloosa, Ala.
Newport Industries, Inc., 230 Park Avenue, New York
North Carolina Pulp Co., Camden, N. J.
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Union Bag & Paper Corp., 233 Broadway, New York
Welch, Holme & Clark Co., 439 West St., N. Y. 14
West Virginia Pulp & Paper Co., 230 Park Ave., New York

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Consolidated Rendering Co., 178 Atlantic Ave., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Falk & Co., Pittsburgh 30
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
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Swift & Co., Union Stock Yards, Chicago
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Toledo Tallow Co., Toledo, Ohio
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Wayne Soap Co., Detroit
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(see also *Brokers and Dealers*)

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Neville Co., Pittsburgh
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Virginia-Carolina Chem. Corp., Richmond 5, Va.
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Beach Soap Co., Lawrence, Mass.
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Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Clarkson Laboratories, 919 N. 9th St., Phila. 23
Clifton Chemical Co., 62 William St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Emulsol Corp., 59 E. Madison St., Chicago
Enterprise Mill Soap Wks., 2231 N. 12th St., Philadelphia
Essential Chem. Co., 2200 N. 32nd St., Milwaukee 8
Haag Labs., 140th & Seeley Ave., Blue Island, Ill.
Hygiene Products, 169 St. Cyr, Montreal, Canada
Hysan Prods. Co., 932 W. 38th Place, Chicago
Iowa Soap Co., 810 Valley St., Burlington, Ia.
Kearny Mfg. Co., Kearny, N. J.
Kessler Chem. Co., State Rd., Phila. 35
Knox-All Corp., 1005 E. Sumner Ave., Indianapolis
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Laurel Soap Mfg. Co., Tioga St., Phila.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn, N. Y.
Los Angeles Soap Co., Los Angeles, Cal.
Masury Young Co., 76 Roland St., Boston 29
M. Michel & Co., 90 Broad St., N. Y.
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Murro Chemical Co., P. O. Box 185, Asheville, N. C.
National Soap Co., 357 South 26th St., Tacoma, Wash.
National Southern Products, Tuscaloosa, Ala.
Newell Gutrad & Co., 350 Fremont St., San Francisco
Nopco Chem. Co., Harrison, N. J.
Onyx Oil & Chemical Co., Warren & Morris Sts., Jersey City 2
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Quaker Chem. Prods. Co., Conshohocken, Pa.
Refined Prods. Corp., Lyndhurst, N. J.
Rome Soap Mfg. Co., N. Y.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Scholler Bros., 3301 Amber St., Philadelphia
E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
Standard Soap Co., Camden, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Union Stock Yards, Chicago
Ultra Chem. Wks., Inc., 2 Woods St., Paterson, N. J.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Jacques Wolf & Co., Passaic, N. J.
Allen B. Wrisley Co., 801 W. 65th St., Chicago
Chas. W. Young & Co., 1247 N. 26th St., Phila.

TEXTILE SODA (see Soda)

TEXTILE SPECIALTIES (Oils, Softeners, etc.)

Alrose Chem. Co., Box 1294, Providence, R. I.
American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
Arabol Mfg. Co., 110 E. 42nd St., N. Y. 17
Arnold, Hoffman & Co., 55 Canal St., Providence, R. I.
Atlantic Refining Co., 260 S. Broad St., Phila. 1
Atlas Powder Co., Wilmington, Del.
Bersworth Chemical Co., Framingham, Mass.
Burkhart-Schirr Chem. Co., Chattanooga 2, Tenn.
Carbide & Carbon Chem., 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Chemical Service Co., of Baltimore, Balto. 30
Clarkson Laboratories, 919 N. 9th St., Phila. 9
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Cowles Chemical Co., 7016 Euclid Ave., Cleveland
E. F. Drew & Co., 15 E. 26th St., N. Y. 10
E. I. du Pont de Nemours & Co., Wilmington, Del.
Emery Industries, Inc., Carew Tower, Cincinnati
Emulsol Corp., 59 E. Madison St., Chicago

TEXTILE SPECIALTIES (Contd.)

Enterprise Mill Soap Wks., 2231 N. 12th St., Philadelphia
Essential Chems. Co., 2200 N. 32nd St., Milwaukee 8
Geigy Co., 89 Barclay St., New York
General Dyestuff Corp., 435 Hudson St., N. Y.
Glyco Products Co., 26 Court St., Bklyn., N. Y.
B. F. Goodrich Chemical Co., Cleveland 15
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Hercules Powder Co., Wilmington, Del.
Heyden Chemical Corp., 393 7th Ave., N. Y. 1
Kearny Mfg. Co., Kearny, N. J.
Kessler Chemical Co., State Rd., Phila. 35
Knox-All Corp., 1005 E. Sumner Ave., Indianapolis
Laurel Soap Mfg. Co., Tioga St., Phila., Pa.
Masury Young Co., 76 Roland St., Boston 29
M. Michel & Co., 90 Broad St., N. Y.
Miranol Chemical Co., 16 Melville Pl., Irvington, N. J.
Monsanto Chem. Co., St. Louis 4
Murro Chemical Co., P. O. Box 185, Asheville, N. C.
National Aniline Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
National Soap Co., 357 South 26th St., Tacoma, Wash.
National Starch Prods. Co., 820 Greenwich St., N. Y.
Nopco Chem. Co., Harrison, N. J.
Onyx Oil & Chemical Co., Warren & Morris Sts., Jersey
City 2
Pennsylvania Refining Co., Butler, Pa.
Publicker Industries, 1429 Walnut St., Phila. 2
Quaker Chem. Prods. Co., Conshohocken, Pa.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
Scholler Bros., 3301 Amber St., Philadelphia
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Standard Soap Co., Camden, N. J.
Swift & Co., Chicago 9
L. Sonneborn Sons, 300—4th Ave., N. Y. 10
Ultra Chem. Works, Inc., 2 Wood St., Paterson, N. J.
Washine-National-Sands, Inc., 37-02 Northern Blvd.,
Long Island City, N. Y.
Woburn Chemical Corp., Harrison, N. J.
Jacques Wolf & Co., Passaic, N. J.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

THALLIUM SULFATE

Foote Mineral Co., 1609 Summer St., Phila.
Heckathorn & Co., Richmond, Calif.
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350—5th Ave., N. Y.
Rosenthal Berrow Co., 25 E. 26th St., N. Y.

THEATRE SPRAYS

Albert Albek, Inc., 3573 Haydon Ave., Culver City, Calif.
A-M-R Chem. Co., 985 E. 35th St., Bklyn. 10
Antiseptol Co., 5524 Northwest Highway, Chicago
Banner Chemical Prod. Corp., 60 Elm St., Newark, N. J.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Bilco Chemical Co., 607 Degraw St., Bklyn.
Boston Chemical Industries, 64 E. Brookline St., Boston
Brilco Labs., 1553-63rd St., Bklyn.
Cenol Co., 4250 Pulaski Ave., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chicago Sanitary Prods. Co., 3100 Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Connecticut Chemical Research Corp., Bridgeport 5,
Conn.
Continental Car-Na-Var Corp., Brazil, Ind.
Copeland Laboratories, 774 College St., Toronto, Can.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Higley Chemical Co., Dubuque, Iowa
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hygiene Products, 169 St. Cyr, Montreal, Canada
Hysan Prods. Co., 932 W. 38th Place, Chicago
Knoxall Corp., 1005 E. Sumner Ave., Indianapolis, Ind.
Lorenz Chemical Co., 135 N. 32nd Ave., Omaha
Midland Labs., Dubuque, Ia.

Miller Prods. Co., 1932 S. W. Water Ave., Portland, Ore.
J. C. Paul & Co., 8140 N. Ridgeway Ave., Skokie, Ill.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St.,
Chicago
Rochester Sanitary Prods. Co., 874 Seward St.,
Rochester, N. Y.
Science Industries, 609-15 Geyer Ave., St. Louis
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Tech Soap Co., S. Chicago Ave. & 73rd St., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Trio Chem. Wks., 341 Scholes St., Bklyn. 6
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 1003 S. California Blvd.,
Chicago 12
Victory Chem. Co., 148 Fairmount Ave., Phila.
G. H. Wood & Co., Toronto, Ont., Canada
Woodlets, Inc., Portland, Pa.
World Spray Co., Inc., 5117 Central Ave., Los Angeles
York Chemicals Co., 23 Dean St., Bklyn.

THERMOMETERS (see Instruments)

THYME OIL (see Essential Oils)

THYMOL (see Aromatic Chemicals)

TIN CRYSTALS (Stannous Chloride)

American Cyanamid Co., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97 St., Cleveland
Metal & Thermit Corp., 120 Broadway, N. Y.

TITANIUM OXIDE (for toilet soaps)

Chemical & Pigment Co., St. Helena, Baltimore
E. I. du Pont de Nemours & Co., Wilmington Del.
Foote Mineral Co., 1609 Summer St., Phila.
Titanium Pigment Co., 111 Broadway, N. Y.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Whittaker, Clark & Daniels, 260 W. Bway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

TOILET PAPER

A. P. W. Paper Co., Albany, N. Y.
Brown Co., Portland, Me.
Hoberg Paper & Fiber Co., Green Bay Wisc.
Scott Paper Co., Chester, Pa.
Straubel Paper Co., Green Bay, Wisc.
Victoria Paper Mills Co., Fulton, N. Y.
Wheeler Paper Co., 299 Madison Ave., N. Y.

TOILET PAPER HOLDERS

A. P. W. Paper Co., Albany, N. Y.
Palmer Fixture Co., Box 347, Waukesha, Wisc.
Scott Paper Co., Chester, Pa.

TOILET PREPARATIONS (Private Label)

(see also Bath Salts, Shampoos, etc.)

Allied-Avon, Inc., Suffern, N. Y.
G. Barr & Co., 3601 S. Racine Ave., Chicago
Copeland Laboratories, 774 College St., Toronto, Can.
Corn King Co., Cedar Rapids, Ia.
Fuld Bros., 702 S. Wolfe St., Baltimore 3
R. Gesell, Inc., 200 W. Houston, N. Y.
Kearny Mfg. Co., Kearny, N. J.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Shores Co., Cedar Rapids, Ia.
John T. Stanley Co., 642 W. 30th St., N. Y.
Uncle Sam Chem. Co., 575 W. 131st St., N. Y. 27
G. H. Wood & Co., Toronto, Ont., Canada
Woodlets, Inc., Portland, Pa.
Allen B. Wisley Co., 6801 W. 65th St., Chicago

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soap business that
quickly and clearly
points out the pros
and cons of a Private
Brand Soap oper-
ation as they apply
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—is best equipped to help you get your share of the profitable Private
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6801 West 65th Street, Chicago, Illinois

TOXAPHENE

Hercules Powder Co., Wilmington 99, Del.

TOXAPHENE FORMULATIONS (Bases and Finished Sprays and Powders)

Acoc Laboratories, 2700 E. 5th St., Austin, Tex.
Agricultural Chemical Co., 18th & E. Jackson Sts., Phoenix, Ariz.
Agricultural Chemicals, Llano, Texas
Agricultural Sulphur & Chem. Co., 417 N. Perry St., Montgomery, Ala.
Ashcraft-Wilkinson Co., Trust Co. of Georgia Bldg., Atlanta, Ga.
Atlas Chem. Corp., Waynesboro, Ga.
Balcom Industries, 600-601 Tenth St., Greeley, Colo.
California Spray-Chemical Corp., Richmond, Calif.
Central Chem. Co., 49 N. Jonathan St., Hagerstown, Md.
Chapman Chem. Co., 38 Court St., Memphis, Tenn.
Chipman Chem. Co., Bound Brook, N. J.
William Cooper & Nephews, 1909 Clifton St., Chicago
Durham Chem. Co., 4124 E. Pacific Way, Los Angeles
Epting Distributing Co., Leesville, S. C.
Flag Sulphur & Chem. Co., Tampa, Fla.
Florida Agricultural Supply Co., Box 658, Jacksonville, Fla.
Food Machy. Corp., Niagara Sprayer & Chem. Div., Middleport, N. Y.
Fresno Agricultural Chem. Co., Fresno, Calif.
General Chemical Div., 40 Rector St., N. Y.
Geigy Co., Inc., 89-91 Barclay St., New York
Georgia-Carolina Oil Co., 1403 Sixth St., Macon, Ga.
Hammond Paint & Chem. Co., 411 River St., Beacon, N. Y.
Hayes-Sammons Co., Mission, Texas
Kolker Chemical Works, 80 Lister Ave., Newark 5, N. J.
Kwik-Way Chem. Co., Box 2536, San Antonio, Texas
O. E. Linck Co., Route 6 & Valley Rd., Clifton, N. J.
Los Angeles Chem. Co., 1960 S. Sante Fe Ave., Los Angeles
Mathieson Chemical Co., Baltimore 3
McConnon and Co., 328 E. 3rd St., Winona, Minn.
McLaughlin, Gormley, King Co., 1715 S. E. 5th St., Minneapolis
C. J. Martin & Sons, 413 Chicon St., Austin, Texas
Naco Fertilizer Co., Box 858, Charleston, S. C.
Naugatuck Chem. Div., U. S. Rubber Co., Naugatuck, Conn.
Occident Elevator Co., Div. of Russell Miller Milling Co., Billings, Montana
Pennsylvania-Salt Mfg. Co., 1000 Widener Bldg., Phila.
Phoenix Chem. Co., 19th Ave., & Roosevelt, Phoenix, Ariz.
Pittsburgh Agricultural Chem. Co., 350 Fifth Ave., N. Y.
Plainsman Supply Co., Plainview, Texas
Port Fertilizer & Chem. Co., Los Fresnos, Texas
John Powell & Co., 1 Park Ave., New York
Prentiss Drug & Chem. Co., 110 Williams St., N. Y.
Private Brands, Inc., 300 S. 3rd St., Kansas City, Kan.
J. W. Quinn Drug Co., Greenwood, Miss.
Ralston Purina Co., 835 S. 8th St., St. Louis
Reasor-Hill Corp., Jacksonville, Ark.
Riverdale Chem. Co., 324-174th St., Harvey, Ill.
Severance Elevator Co., Severance, Colo.
Shell Chemical Corp., 500 5th Ave., N. Y. 18
Sherwin-Williams Co., 101 Prospect Ave., N.W., Cleveland
Southwest Co-operative Wholesale, 1821 E. Jackson St., Phoenix, Ariz.
Stauffer Chem. Co., 420 Lexington Ave., New York
Stauffer Chem. Co., 636 California St., San Francisco
Taylor Chem. Co., Aberdeen, N. C.
Thompson-Hayward Chem. Co., 2915 Southwest Blvd., Kansas City, Mo.
Tyner-Petrus Co., 100 Trenton St., West Monroe, La.
United Cooperatives, Inc., Fidelity-Phila. Trust Bldg., Philadelphia 9
F. H. Vahlsing, Inc., Elsa, Texas
Verhalen, Inc., Weslaco, Texas
Woolfolk Chemical Works, Fort Valley, Ga.

TOILET SOAPS (Private Label)

Armour & Co., 1355 W. 31st St., Chicago
Baum's Castorine Co., Rome, N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. LaSalle St., Chicago

Private Brand SOAP

with
**TOP QUALITY
INGREDIENTS**
by
**MODERN SOAP-
MAKING METHODS**
and
**TECHNICAL
"KNOW-HOW"**

for
**ALL FINE SOAPS,
SOAP FLAKES,
GRANULATED
SOAP**
**LIQUID AND PASTE
OIL SOAPS;**
**LIQUID, SYNTHETIC,
AND POWDERED
DETERGENTS**

HEWITT SOAP CO., Inc.

DAYTON, OHIO

CHICAGO, ILL.

NEW YORK, N. Y.

Armour's Industrial Soaps and Detergents



For Laundries

For high-temperature whitework, Armour's Flint is a quick penetrating, high titer (41-42°) soap which contains a minimum of 88% anhydrous soap. Or use ready-built Giant Powder—with high soap content and a 41-42° titer.

For color work, where you need a medium or low titer product, use Hilo—a built soap with medium titer and high soap content.

For woollens and delicate fabrics, Royal Flakes is a neutral, pure soap, quick sudsing and free rinsing, with a minimum of 88% anhydrous soap, and a titer of 36-38°.



For Kitchens

For the cleanest dishes—with a minimum of work—use Quad. Combining wetting, dispersing, emulsifying and penetrating actions into one power-packed product, Quad is also low-sudsing, so you get quick rinses without clogged nozzles or drains.

Pots and pans require a fast-working synthetic that leaves no greasy scum—and DO-ALL Detergent was made to order for this job. A ready-built alkyl aryl sulfonate, DO-ALL is free-rinsing and leaves no germ-catching film on any of your utensils.



For Drycleaning

Armour's new improved Liquid Dri-clene is a concentrated drycleaning product which has been proved to do a better, faster job. Liquid Dri-clene has excellent emulsifying properties and remains stable under both high and low temperatures.

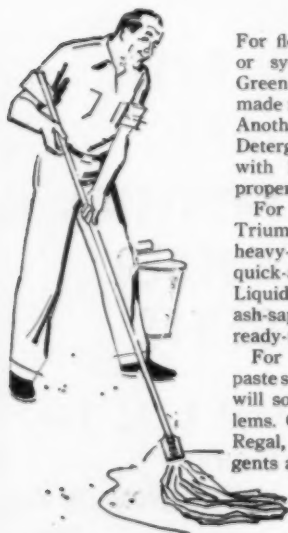
Armour's Texsoft is a cationic softening agent which restores a fine, soft hand to fabrics which have been resin-coated or pre-shrunk. Texsoft can be applied either in laundries or in drycleaning plants, as well as in textile mills.



For Hands

Dial Soap contains AT-7—Hexachlorophene—so it is a truly germicidal soap. Yet it is as mild as the finest complexion soap—and completely non-irritating. Made of fine soaps, Dial is rich-lathering, gentle and effective.

Hexachlorophene protection is also available in Formula #99, made from the same fine soap base as Dial. Either the 20% or Concentrate Formula #99 will solve your washroom problems.



For Maintenance

For floors requiring a neutral soap or synthetic, Armour's Hospital Green Soap is a potash soft soap made from pure vegetable oil stock. Another product is Regal Synthetic Detergent, an alkyl aryl sulfonate with high wetting and detergent properties.

For concrete or tile floors, use Triumph Synthetic Detergent—a heavy-duty, built, non-ionic product, quick-acting and easy-rinsing. Or try Liquid Scrub Soap—a neutral potash-saponified vegetable oil soap in ready-to-use liquid form.

For walls, Lusto is a neutral paste soap with vegetable base which will solve your maintenance problems. Or, if you prefer synthetics, Regal, Triumph and DO-ALL Detergents are all recommended.

For more information on Armour products, call or write your Armour Salesman today

ARMOUR

Industrial Soap Department

Armour and Company • 1355 West 31st St. • Chicago 9, Ill.

TOILET SOAP (Private Label) (Contd.)

Draper Soap Co., 171 Front St., Pawtucket, R. I.
J. Eavenson & Sons, Del & Penn Sts., Camden, N. J.
Essential Chemicals Co., 2200 N. 32nd St., Milwaukee 8
James Good Co., Susquehanna Ave., & Martin St., Phila.
Haag Labs., Inc., P. O. Box 114, Blue Island, Ill.
Hewitt Soap Co., Dayton, O.
Long Island Soap Co., 29 Bridgewater St., Brooklyn
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles, Cal.
National Soap Co., Box 1613, Tacoma, Wash.
Newell, Guttradt Co., 350 Fremont St., San Francisco
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Products, 610 E. Clarence Ave., St. Louis
Procter & Gamble, Cincinnati
Reinitz Soap Corp., 46-44 11th St., Long Island City, N. Y.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
E. B. Snyder Labs., 2137 E. Harold St., Phila. 25
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Tech Soap Mfg. Co., S. Chicago Ave. & 73rd St., Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Wolf Creek Soap Co., Dayton, Ohio
Allen B. Wisley Co., 6801 W. 65th St., Chicago

TOWEL DISPENSERS (see Vending Machines)

TOILET SEAT COVERS

Lorco Industries, Clarke & Hornet Sts., Cincinnati
Morton Mfg. Co., 5105 W. Lake St., Chicago
National Towel Bendon Ltd., 12 Stewart St., San Francisco
Protecto Prods. Co., 1450 W. Holt St., Ponomo, Calif.
Sani-Gard Cover Co., 411 W. 5th St., Los Angeles

TOILET SOAP BASE (for Cakes)

Armour & Co., 1355 W. 31st St., Chicago
Colgate-Palmolive-Peet, Co., Jersey City, N. J.
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles, Cal.
Nopco Chem. Co., Harrison, N. J.
Peck's Products, 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Swift & Co., Chicago 9
John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wisley Co., 6801 W. 65th St., Chicago

TOILET SOAP MILLS (see Soap Machinery)

TRASH CARTS (metal and canvas)

Federal Fibre Corp., 3704 Tenth St., Long Island City 1, N. Y.
S. C. Lawlor Co., 124 N. Aberdeen St., Chicago 7, Ill.
W. J. McElmoyl Co., Groveville, N. J.

TRIETHANOLAMINE

Carbide & Carbon Chemicals, 30 E. 42nd St., N. Y.
Dow Chemical Co., Midland, Mich.
Jefferson Chemical Co., 711 Fifth Ave., N. Y.
Sharpley Chemicals, Inc., 123 S. Broad St., Phila.

TRIETHANOLAMINE SOAPS

Alrose Chem. Co., Box 1294, Providence, R. I.
Chem. Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West St., Balto.
Chicago Sanitary Prods., 3100 S. Throop St., Chicago 8
Clifton Chemical Co., 62 William St., N. Y.
Copeland Laboratories, 774 College St., Toronto, Can.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Essential Chemicals Co., 2200 N. 32nd St., Milwaukee 8
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Griffin Chem. Co., 1000 16th St., San Francisco

Hysan Prods. Co., 932 W. 38th Place, Chicago
Industrial Materials Co., 1017 McCall St., Houston, Tex.
Knoxall Corp., 1005 E. Sumner Ave., Indianapolis, Ind.
Kranich Soap Co., 60 Richards St., Bklyn.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Quaker Chem. Prods. Co., Conshohocken, Pa.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Trio Chemical Wks., 341 Scholes St., Bklyn. 6

TRIPOLI (see Abrasives and Fillers)

TRIPOLYPHOSPHATES (Sodium Tripolyphosphate)

Blockson Chemical Co., Joliet, Ill.
General Chemical Div., 40 Rector St., N. Y. C.
A. R. Maas Chemical Co., 4570 Ardine St., South Gate, Calif.
Monsanto Chem. Co., St. Louis 4
Virginia-Carolina Chem. Corp., Richmond 8, Va.
Victor Chemical Wks., 141 W. Jackson, Chicago
Westvaco Chem. Div., Food Machy. & Chem. Corp., 415 Lexington Ave., N. Y. 17

TRISODIUM PHOSPHATE

(see also Brokers and Dealers)

Amer. Agricultural Chem. Co., 50 Church St., N. Y.
Blockson Chemical Co., Joliet, Ill.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Emeryville Chem. Co., 405 Montgomery St., San Francisco
General Chemical Div., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
A. R. Maas Chem. Co., South Gate, Calif.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Chas. Page & Co., 50 E. 52nd St., N. Y. 17
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Victor Chemical Works, 141 W. Jackson Blvd., Chicago
Virginia-Carolina Chemical Corp., Richmond, Va.
Westvaco Chem. Div., Food Machy. & Chem. Corp., 405 Lexington Ave., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

TRUCKS (Lift Trucks, etc.)

American Car & Foundry Co., 30 Church St., N. Y.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Fairbanks, Morse & Co., 900 S. Wabash St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Frank G. Hough Co., Libertyville, Ill.
G. B. Lewis Co., Watertown, Wisc.
Self-Lifting Piano Truck Co., Findlay, Ohio
Yale & Towne Mfg. Co., Chrysler Bldg., N. Y.

TUBE FILLING MACHINERY

Arenco Mach. Co., 25 W. 43rd St., N. Y. 18
Clevon Products Co., 27-31 Mechanic St., Buffalo
Arthur Colton Co., Detroit, Mich.
Consolidated Prod. Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
K. Diehl Mateer & Co., Devon 1, Pa.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Perl Machine Mfg. Co., 68 Jay St., Brooklyn 1
Geo G. Rodgers Co., 2401 Third Ave., N. Y.
Scientific Filter Co., 59 Rose St., N. Y. 7
F. J. Stokes Machine Co., 5918 Tabor Rd., Philadelphia

TUBES (Collapsible)

Aluminum Company of America, Gulf Bldg., Pittsburgh
Art Tube Co., Irvington, N. J.
Bond Penn Tube Co., 501 Monroe St., Wilmington, Del.
Globe Collapsible Tube Corp., 28 Columbia Heights, Brooklyn, N. Y.
Hygienic Tube Co., 34 Ave. L., Newark, N. J. (Celluloid)



UNITIZED CONVEYOR TABLES

AN ALL PURPOSE CONVEYOR

- FOR ASSEMBLY
- FOR INSPECTION
- FOR PACKAGING

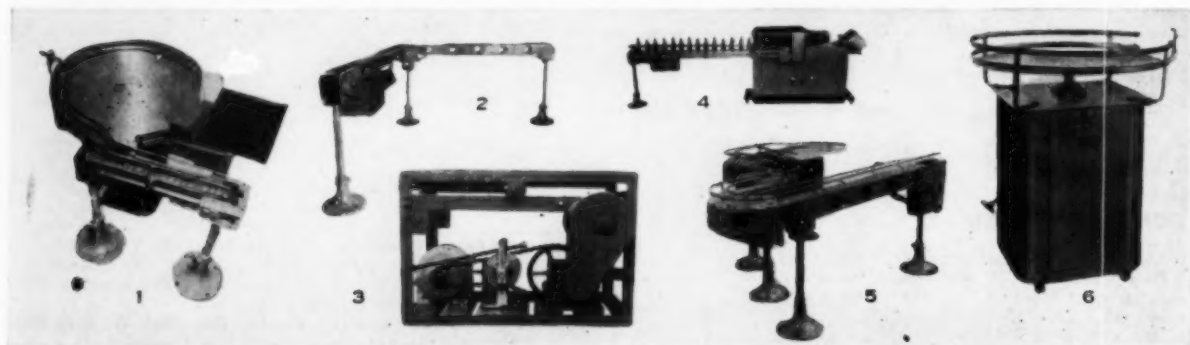


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PORTABLE or STATIONARY
VERSATILE**

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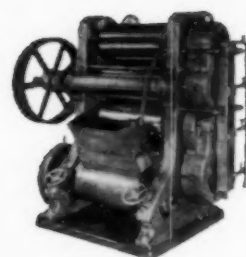
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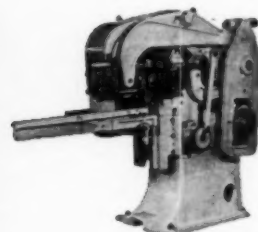
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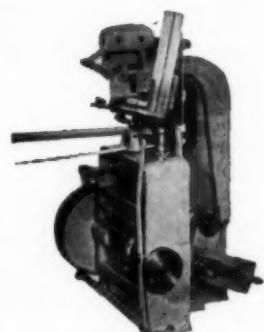
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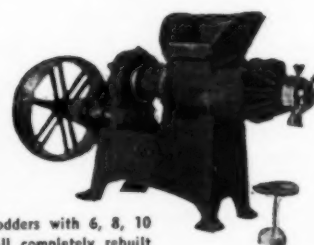
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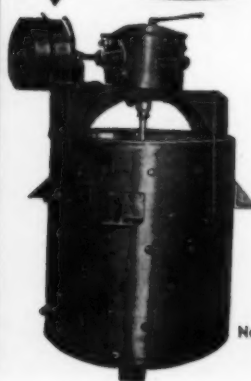
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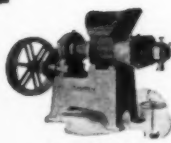
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WARCO* WAX 180	180-185	4-7	WHITE	0.0	0.0	MICRO-CRYSTALLINE HARD AND BRITTLE
WARCO* WAX 150	145-150	20-25	BROWN YELLOW	0.0	0.0	MICRO-CRYSTALLINE PLASTIC
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500	190/195	10 max.	2 to 2½	Nil	Nil
700	190/195	5 max.	2 to 2½	Nil	Nil
1035	195/200	2 max.	2 to 2½	Nil	Nil
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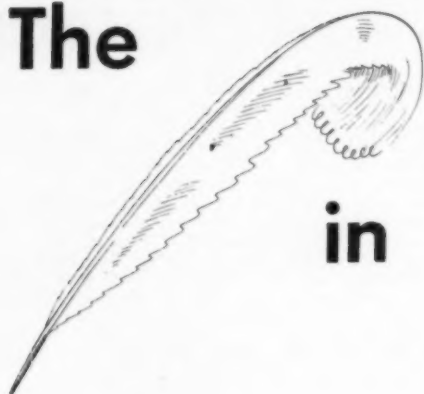
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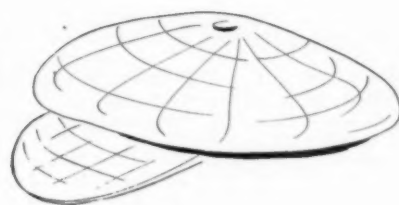
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Reference Section

	<i>Page</i>
U. S. SPECIFICATIONS.....	213
PERFUMING MATERIAL SPECIFICATIONS.....	235
C.S.M.A. AEROSOL TEST METHODS.....	251
1952 PEET GRADY METHOD.....	255
C.S.M.A. TEST FOR RESISTANCE OF TEXTILES TO INSECT PESTS.....	259
TRADE ASSOCIATION OFFICIALS.....	263
SOAP AND SANITARY CHEMICALS INDEX.....	269
ADVERTISERS INDEX	277

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U. S. Government Specifications

General requirements of the U. S. Federal Specifications Board for soaps, cleaners, detergents, dishwashing compound, polishes, floor wax, insecticides, etc.

Powdered High-Titer Built Soap (P-S-563)

The soap covered by this specification shall be of one type as hereinafter specified: *Composition*.—The composition of the soap shall be as shown in Table I. *Form*.—The soap shall be a homogeneous, uniform mixture of soap and alkalies in powdered form. It shall be readily soluble. *Color*.—The soap shall have a light uniform color. *Odor*.—The odor shall not be objectionable in the soap as received, or in a hot water solution. The soap shall not leave an objectionable odor on the objects after using with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of

Table I.—Composition (P-S-563)

	Maximum	Minimum
	Per Cent	
Moisture and matter volatile at 105°C.....	16	
Free alkali, calculated as sodium hydroxide, NaOH.....	0.2	21 per cent
Alkaline salts, calculated as sodium carbonate, Na ₂ CO ₃		
Matter insoluble in water.....	1.0	
Chloride (calculated as sodium chloride).....	0.5	
Anhydrous soap.....		56 per cent
Titer of the mixed fatty acid prepared from the soap.....		39°C.
Residue retained on a No. 12 sieve.....	1.5	
Passing through a No. 140 sieve.....	18.0	
Rosin.....	None	
Unsaponifiable matter.....	1.0	
Starch.....	None	

the material under the above conditions shall conform to the odor of the sample approved by the bureau concerned. The approved sample shall be kept in an airtight container for comparison with the sample submitted for inspection.

Cake Grit Soap (P-S-571a)

Cake grit soap shall be of the following types as specified: Type A—for fine work, such as glass and enamel; Type B—for scouring and scrubbing.

Type A—

Moisture and matter volatile at 105° ±2° C. shall not exceed 4 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na₂CO₃), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 88 per cent nor more than 93 per cent. The insoluble siliceous material shall consist of not less than 90 per cent of ground feldspar. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5

ONLY the essential requirements of these government specifications have been extracted in our summary. Copies of the complete specifications, including details as to packaging, methods of analysis, etc., are available through the U. S. Federal Specifications Board. The specifications listed are the latest versions as of the date of compilation of this edition of the Blue Book. Readers are cautioned, however, that further changes are being made periodically, and that the latest amended versions of all specifications should be consulted in filling government orders. P-S-536B, the Federal Specification titled "Soap and Soap-Products (Including Synthetic Detergents); Methods of Sampling and Testing," particularly should be consulted.



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Oil Cloves	Oil Spearmint
Oil Eucalyptus	Oil Thyme—Red
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Oil Lemongrass	Oil Wormseed

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per cent. Sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at $105^{\circ} \pm 2^{\circ} \text{C}$., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall not scratch glass or enameled surfaces. The material shall be unscented and shall be of a light gray or white color.

Type B—

Moisture and matter volatile at $105^{\circ} \pm 2^{\circ} \text{C}$ shall not exceed 5 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall not be less than 75 nor more than 85 per cent. The insoluble siliceous material shall be mainly quartz, and it all must pass through a No. 100 sieve. Sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at $105^{\circ} \pm 2^{\circ} \text{C}$., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall be unscented and shall be of a light gray or white color.

Hand Grit Soap (P-S-576a)

Hand-grit soap shall be a cake soap containing clean, finely divided insoluble siliceous matter, as free as possible from water, uncolored, mildly perfumed unless otherwise specified, and well compressed in firm, smooth cakes.

Matter volatile at 105°C shall not exceed 25 per cent. Total alkalinity of matter insoluble in alco-

hol (alkaline salts), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 25 nor more than 35 per cent. The insoluble siliceous material shall not yield more than 2 per cent of residue retained on a No. 100 sieve and not more than 10 per cent of residue retained on a No. 200 sieve. Sugar, and foreign matter shall not be present. Rosin shall not exceed 5 per cent. Anhydrous soap shall be not less than 35 per cent. The percentage of moisture and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated to the basis of material containing 25 per cent of matter volatile at 105°C . Unless otherwise specified, each cake shall weigh not less than 8 ounces nor more than 16 ounces.

Soap; Low-Titer (P-S-600a)

Low-titer soap shall be of the following types and classes:

Type I—Bar form

Type II—Other forms

Class A—Granular

Class B—Powdered

Class C—Flake

The soap shall have a uniform color. The odor shall not be

objectionable in the soap as received or in a solution of the soap in water at 125° to 130°F . The material shall not leave an objectionable odor on objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. When specified, each bidder shall submit with his proposal a sample of the material that he proposes to furnish, to show color, odor, and condition.

Low-titer soap shall conform to detail requirements as listed in the table below.

Soap Powder (P-S-606a)

Soap powder shall be a uniform mixture of soap and sodium carbonate, and/or other alkaline salts in powdered form. It shall be readily soluble in tepid water, shall contain no free caustic alkali or inert fillers, and shall be free from objectionable odor.

Anhydrous soap shall be not less than 15 per cent. Alkaline salts, calculated as sodium carbonate (Na_2CO_3), shall be not less than 30 per cent. The sum of anhydrous soap and alkaline salts, calculated as sodium carbonate shall be not less than 55 per cent.

Detail Requirements for Low Titer Soap (P-S-600A)

	Type I		Type II	
	Max.	Min.	Max.	Min.
Matter volatile at $105^{\circ} \pm 2^{\circ} \text{C}$. (per cent).....	35.0	..	7.0	..
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride (per cent).....	2.0	..	9.0	..
Water soluble sodium silicate (calculated as in Spec P-S-536a) (per cent)	0.4			
Free alkali, calculated as sodium hydroxide (NaOH) (per cent)	0.1	..	0.4	..
Free acid, calculated as oleic acid (per cent).....	0.1	..	None	..
Matter insoluble in water (per cent).....	.5	..	1.5	..
Rosin	None	..	None	..
Sugar	None	..	None	..
Copper (parts per million).....	10.0			
Unsaponified saponifiable matter (per cent).....	1.0	..	1.0	..
Anhydrous soap (per cent).....	..	64.0	..	81.0
Titer of the mixed fatty acids prepared from the soap	28°C	..	22°C	..
Iodine number (Wijs) of the mixed fatty acids prepared from the soap.....	90.0	74.0	90.0	74.0
Acid number of the mixed fatty acids prepared from the soap	205.0	180.0	205.0	180.0
Residue retained on a No. 12 sieve (class B only) (per cent) .....	..	..	1.5	..

White Floating Toilet Soap (P-S-616a)

Floating toilet soap shall be a cake soap without objectionable odor, thoroughly saponified, and so prepared as to float on water.

Moisture and matter volatile at 105° C. shall not exceed 34 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Chloride, calculated as sodium chloride (NaCl), shall not exceed 1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Anhydrous soap shall be not less than 62 per cent. Acid number of the mixed fatty acids prepared from the soap, shall be not less than 212. Rosin, sugar and foreign matter shall not be present. The percentage of moisture and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated on an assumed moisture and volatile matter content of 34 per cent.

Liquid Toilet Soap (P-S-618a)

Liquid toilet soap shall be a clear solution of pure vegetable oil potash (or potash and soda) soap with or without glycerol or alcohol, suitably perfumed, and free from all foreign matter. It shall quickly form a satisfactory lather and have no injurious effect and leave no objectionable odor on the skin.

The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave any objectionable odor on the skin or other surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water. Unless otherwise specified each bidder shall submit with his proposal a one-quart sample, placed in a screw-top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries.

The material shall be a clear solution, free from objectionable

odor, other than from coconut oil, and shall form a satisfactory lather. Total anhydrous soap shall be not less than the equivalent of 15 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali calculated as potassium hydroxide (KOH) shall not exceed 0.05 per cent. Chloride calculated as potassium chloride (KCl) shall not exceed 0.3 per cent. More than traces of sulphates and sugar shall not be present. All constituents shall be calculated on the basis of the original sample.

Chip Soap (P-S-566b)

Chip soap shall be a soap in chip form made from soda and fats, or fatty acids, without rosin, as free as possible from water and all substances other than true soap.

The composition of chip soap shall conform to the requirements shown in table I.

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 10 per cent.

The soap shall have a light uniform color.

The odor shall not be objectionable in the soap as received, or in a hot-water solution. The soap shall not leave an objectionable odor on objects after washing with a water solution of the soap and rinsing thoroughly with hot water.

Chip soap is subject to a possible gain or loss of weight, depending on atmospheric or storage conditions, or both, or on packaging, as a result of fluctuation in the

moisture content. Changes in the moisture content result in a corresponding change in the percentage of total solids or anhydrous soap content, or both.

Chip soap should be purchased by net weight, provided the matter volatile at 105° C. is neither above nor below 8 per cent.

Deliveries containing more than 10 per cent of matter volatile at 105° C. should be rejected without further test.

On deliveries containing 10 per cent or less of matter volatile at 105° C., settlement should be made on the basis of a product containing 8 per cent moisture. The net weight of the material is to be paid on an 8 per cent moisture and matter volatile basis.

Laundry Chip Soap (Rosin Type) P-S-581a (GSA) (Interim)

This specification covers rosin-type chip laundry soap for use in heavy-duty laundering, such as heavily-soiled occupational clothing, where high wash temperatures are required.

Laundry chip soap shall be of but one type.

Laundry chip soap shall be a well-made, uniformly mixed soap in chip form, made from soda, rosin, and fats, and shall be of a uniform color.

The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on objects after washing with a water solution of the soap and rinsing thoroughly with hot water.

The material shall conform to the detail requirements in the accompanying table.

Table I.—Composition Chip Soap (P-S-566b)

	Maximum	Minimum
Moisture and matter volatile at 105° C. percent	10.0	....
Sum of free alkali, total matter insoluble in alcohol, and chloride .....do	4.0	....
Free alkali, calculated as sodium hydroxide (NaOH) .....do	0.2	....
Matter insoluble in water .....do	1.0	....
Anhydrous soap .....do	....	85.0
Titer of the mixed fatty acids prepared from the soap .....do	....	39° C.
Rosin .....do	None	....

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 15 per cent.

Laundry chip soap covered by this specification is intended for use with moderately hard water for heavy-duty laundry purposes.

It is subject to a possible gain or loss of weight, depending on atmospheric or storage conditions, or both, or on packaging, as a result of fluctuation in the moisture content. Changes in the moisture content result in a corresponding change in the percentage of total solids or anhydrous soap content, or both.

The material should be purchased by net weight, provided the matter volatile at 105° C. is neither above nor below 12 per cent.

Deliveries containing more than 15 per cent of matter volatile at 105° C. should be rejected without further test.

On deliveries containing less than 15 per cent of matter volatile at 105° C., settlement should be made on the basis of a product containing 12-per cent moisture, that is, 0.88 pound nonvolatile matter should be considered 1 pound of soap.

Granulated Laundry Soap (Rosin Type) P-S-583a (GSA) (Interim)

This specification covers rosin-type granulated laundry soap

Detail Requirements for Laundry Chip Soap (Rosin Type) P-S-581a (GSA)

	Maximum Percent	Minimum Percent
Moisture and matter volatile at 105° C.....	15.0	....
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride.....	12.0	....
Free alkali, calculated as sodium hydroxide (NaOH).....	.5	....
Free acid, calculated as oleic acid.....	.5	....
Matter insoluble in water.....	1.0	....
Titer of mixed fatty acids prepared from the soap.....	....	35° C.
Chloride, calculated as sodium chloride (NaCl).....	1.0	....
Rosin	20.0	....
Anhydrous soap .....	....	72.0

for use in heavy duty laundering, such as heavily-soiled occupational clothing, where high wash temperatures are required. It shall be of but one type.

It shall be a well-made, uniformly mixed soap in granulated or powdered form, made from soda, rosin, and fats, and of a uniform color.

The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on objects after washing with a water solution of the soap and rinsing thoroughly with hot water.

The material shall conform to the detail requirements in the accompanying table.

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 10 percent.

The laundry granulated soap covered by this specification is intended for use with moderately hard

water for heavy-duty laundry purposes.

It is subject to a possible gain or loss of weight, depending on atmospheric or storage conditions, or both, or on packaging, as a result of fluctuation in the moisture content. Changes in the moisture content result in a corresponding change in the percentage of total solids or anhydrous soap content, or both.

The material should be purchased by net weight, provided the matter volatile at 105° C. is neither above nor below 8 percent.

Deliveries containing more than 10 percent of matter volatile at 105° C. should be rejected without further test.

On deliveries containing less than 10 percent of volatile matter at 105° C., settlement should be made on the basis of a product containing 8 percent moisture, that is, 0.92 pound nonvolatile matter should be considered 1 pound of soap.

Ordinary Bar Laundry Soap (P-S-591b) (GSA) (Interim)

This specification covers an ordinary laundry bar soap, containing rosin, for use in heavy-duty laundering, such as heavily-soiled occupational clothing, where normal wash temperatures are involved. It shall be of but one type.

Ordinary laundry bar soap shall be a well-made, uniformly mixed laundry or common soap, made from soda, rosin, and fats, and shall be of uniform color.

The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water.

Detail Requirements for Granulated Laundry Soap (Rosin Type) P-S-583a (GSA)

	Maximum Percent	Minimum Percent
Moisture and matter volatile at 105° C.....	10.0	....
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride.....	14.0	....
Free alkali, calculated as sodium hydroxide (NaOH).....	.5	....
Free acid, calculated as oleic acid.....	.5	....
Matter insoluble in water.....	1.0	....
Titer of mixed fatty acids prepared from the soap.....	....	35° C.
Chloride, calculated as sodium chloride (NaCl).....	1.0	....
Rosin	20.0	....
Anhydrous soap .....	....	75.0
Residue retained on a No. 12 sieve.....	2.0	....

The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water.

The material shall conform to the detail requirements in the accompanying table.

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 36 percent.

Ordinary bar soap is subject to a possible gain or loss of weight, depending on atmospheric or storage conditions, or both, or on packaging, as a result of fluctuation in the moisture content. Changes in the moisture content result in a corresponding change in the percentage of total solids or anhydrous soap content, or both.

The material should be purchased by net weight, provided the volatile matter at 105° C. is neither above nor below 34 percent.

Deliveries containing more than 36 percent of volatile matter at 105° C. should be rejected without further test.

On deliveries containing less than 36 percent of volatile matter at 105° C., settlement should be made on the basis of a product containing 34 percent moisture, that is, 0.66 pound nonvolatile matter should be considered 1 pound of soap.

Laundry Soap Powdered (P-S-596b) (GSA) (Interim)

This specification covers a white or light amber powdered laun-

Detail Requirements of Powdered Laundry Soap (P-S-596b) (GSA)

	Maximum	Minimum
Moisture and matter volatile at 105° C. (percent).....	6.0	....
Sum of free alkali, total matter insoluble in alcohol, and sodium chloride (percent).....	6.0	....
Free alkali, calculated as sodium hydroxide (NaOH) (percent).....	.2	....
Matter insoluble in water (percent).....	1.0	....
Anhydrous soap (percent).....	....	89.0
Titer of mixed fatty acids prepared from the soap.....	....	39° C.
Residue retained on a No. 12 sieve (percent).....	1.5	....
Rosin	None	....

dry soap suitable for use in high temperature laundering of moderately soiled cotton fabrics, and for general cleaning with soft water.

Powdered laundry soap shall be a soap in powdered form made from soda and fats, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor.

The material shall conform to the detail requirements in the accompanying table.

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 6 percent.

Powdered laundry soap covered by this specification is intended for laundering and general cleaning with soft water, where the presence of alkaline salts is not desirable.

Powdered soap is subject to a possible gain or loss of weight, depending on atmospheric or storage conditions, or both, or on packaging, as a result of fluctuation in the moisture content. Changes in the moisture content result in a corresponding change in the percentage of

total solids or anhydrous soap content, or both.

The material should be purchased by net weight, provided the volatile matter at 105° C. is neither above nor below 4 percent.

Deliveries containing more than 6 percent of matter of volatile matter at 105° C. should be rejected without further test.

On deliveries containing less than 6 percent of volatile matter at 105° C., settlement should be made on the basis of a product containing 4 percent moisture; that is, 0.96 pound of nonvolatile matter should be considered 1 pound of soap.

Automobile, Floor, and General Cleaning Soap P-S-598a (GSA) (Interim)

This specification covers liquid and paste type soaps suitable for use in general cleaning with soft water and shall be of the following types:

Type I—Liquid

Type II—Paste.

Type I. Liquid soap.—The material shall be uniform liquid soap made solely from whole neutral vegetable oils or distilled vegetable-oil fatty acids and potash, and shall conform to the requirements set forth in this section.

Type II. Paste soap.—The material shall be a uniform gel or paste soap made solely from whole neutral vegetable oils or distilled vegetable-oil fatty acids and potash, and shall conform to the requirements set forth in this section.

Type I. Liquid soap.—The material shall be soluble in soft water and when diluted with water shall act as a cleaner. The flash point shall be above its boiling point. It shall

Detail Requirements for Ordinary Bar Laundry Soap (P-S-591b) (GSA)

	Maximum	Minimum
Moisture and matter volatile at 105° C. (percent).....	36.0	....
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride (percent).....	11.0	2.0
Free alkali, calculated as sodium hydroxide (NaOH) (percent).....	.5	....
Free acid, calculated as oleic acid (percent).....	.5	....
Matter insoluble in water (percent).....	1.0	....
Titer of mixed fatty acids prepared from the soaps.....	....	35° C.
Chloride, calculated as sodium chloride (NaCl) (percent).....	1.0	....
Rosin (percent)	25.0	....
Anhydrous soap (percent).....	....	52.0

not contain any solvents or oils that will damage floor surfaces. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water.

Type II. Paste soap.—The material shall be a uniform translucent firm gel or paste of a yellowish-white to brownish-yellow color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water.

Solubility and sudsing.—The soap shall dissolve readily to give a 0.15-0.2-percent solution, using distilled water at 15.5° to 20° C. (60° to 68° F.). The solution so prepared shall yield at least 150 ml. of suds.

A solution of the soap in soft water shall act as a cleaner and shall not damage surfaces on which it is used.

The material of each type shall not become rancid or otherwise deteriorate when kept in a closed container.

The material shall conform to the detail requirements shown in the table for the type indicated—percentages are by weight:

The percentage of moisture for Type II only shall be computed and reported by the testing laboratory on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture content of 50 percent.

Soap of each type is intended for use in automobile washing and on all kinds of floors, except on rubber flooring.

A solution of about 1 to 2 ounces of the paste soap (type II) per gallon of soft water should be satisfactory. If the soap is not all dissolved, there will be waste and some undissolved soap may be left on the surface being cleaned. If the soap is all dissolved and the surface on which it is used is thoroughly rinsed with plain water, material conforming to type II should be satisfactory for cleaning operations. A ready-prepared liquid soap (type I) is time saving as it is in a condition to dilute and apply. If the paste soap is completely dissolved and diluted for use, it should rinse off as readily as would a ready-prepared liquid soap, since soap solutions are used in each case. If the paste soap is not completely dissolved, the use of the liquid soap would reduce waste.

All ordinary soaps (liquid, paste or cake) when dissolved in a water supply containing hardness constituents will react with the latter, depositing some insoluble slimy

calcium and magnesium soaps. The removal of these insoluble soaps requires thorough rinsing or mopping with plain water.

Liquid soap (type I) should be purchased by volume. A gallon of soap should mean 231 cubic inches at 15.5° C. (60° F.). Paste soap (type II) should be purchased by net weight, providing the moisture does not exceed 55.0 percent. With deliveries containing less than 55.0 percent of moisture settlement should be made on the basis of 55.0 percent of moisture, that is, 0.45 pound of nonvolatile matter should be considered 1 pound of detergent.

Potash-*Linseed Oil Soap* (P-S-603a) (GSA) (Interim)

This specification covers liquid- and paste-type linseed oil soaps suitable for use in washing floors and linoleum and shall be of the following types:

Type I—Liquid soap.—The material shall be soluble in soft water and when diluted with water shall act as a cleaner. The flash point shall be above its boiling point. It shall not contain any solvents or oils that will damage floor surfaces. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water.

The material shall be a uniform liquid soap made solely from whole neutral raw linseed oil and potash.

Type II—Paste soap.—The material shall be a uniform translucent firm gel or paste soap of a yellowish-white to greenish-brown color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water.

The soap shall dissolve readily to give a 0.15- to 0.2-percent solu-

Detail Requirements for Auto, Floor and General Cleaning Soap
P-S-598a (GSA)

	Type II		Type I	
	Mini- mum	Maxi- mum	Mini- mum	Maxi- mum
Moisture (toluene distillation method) (percent).....	55
Total matter insoluble in alcohol (percent).....	...	0.5	...	1.0
Free alkali, calculated as potassium hydroxide (KOH) (percent).....05	...	.1
Free acid, calculated as oleic acid (percent).....1	...	.2
Alkaline salts, calculated as potassium carbonate (K ₂ CO ₃) (percent).....1	...	.2
Matter insoluble in distilled water (percent).....1	...	.2
Chloride, calculated as potassium chloride (KCl) (percent).....3	...	.5
Unsaponified and unsaponifiable matter (percent).....4	...	.8
Anhydrous soap, calculated as potash soap (percent).....	20	...	43	...
Total sodium compounds, calculated as Na ₂ O (percent).....2	...	.5
Glycerol (percent).....	...	1.8	...	4.0
Iodine number (WIJS) of mixed fatty acids derived from the soap.....	80	150	80	150
Acid number of mixed fatty acids derived from the soap..	195	205	195	205
Rosin	None	...	None
Sugar	None	...	None

tion, using distilled water at 15.5° to 20° C. (60° to 68° F.). The solution so prepared shall yield at least 150 ml. of suds.

A solution of the soap in soft water shall act as a cleaner and shall not damage floor surfaces.

The material of each type shall not become rancid or otherwise deteriorate when kept in a closed container.

The material shall conform to the detail requirements in the table for the type indicated. Percentages are by weight.

The percentage of moisture of Type II only shall be computed and reported by the testing laboratory on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture content of 50 percent.

Soap of each type is intended for use on all kinds of floors, except on rubber flooring.

A solution of about 1 to 2 ounces of the paste soap (type II) per gallon of soft water should be satisfactory. If the soap is not all dissolved, there will be waste and some undissolved soap may be left on the surface being cleaned. If the soap is all dissolved and the surface on which it is used is thoroughly rinsed with plain water, material conforming to type II should be satisfactory for cleaning operations. A ready-prepared liquid soap (type I) is time saving as it is in a condition

Detail Requirements for Milled Toilet Soap (P-S-621b) (GSA)

	Maximum	Minimum
	Percent	Percent
Moisture and matter volatile at 105° C.	15.0	....
Sum of free alkali, total matter insoluble in alcohol, and sodium chloride	1.7	....
Free alkali, calculated as sodium hydroxide (NaOH) .....	.1	....
Matter insoluble in water .....	.4	....
Unsaponified saponifiable matter (free fat) .....	.3	....
Anhydrous soap .....	....	83.0
Rosin, sugar, and foreign matter	None	....

to dilute and apply. If the paste soap is completely dissolved and diluted before use, it should rinse off as readily as would a ready-prepared liquid soap, since soap solutions are used in each case. If the paste soap is not completely dissolved, the use of the liquid soap would reduce waste.

All ordinary soaps (liquid, paste, or cake) when dissolved in a water supply containing hardness constituents will react with the latter, depositing some insoluble slimy calcium and magnesium soaps. The removal of these insoluble soaps requires thorough rinsing or mopping with plain water.

Liquid soap (type I) should be purchased by volume. A gallon should mean 231 cubic inches at 15.5° C. (60° F.). Paste soap (type II) should be purchased by net weight, providing the moisture does not exceed 55.0 percent. With deliveries containing less than 55.0 percent of moisture settlement should be made on the basis of 55.0 percent of moisture; that is, 0.45 pound of

nonvolatile matter should be considered 1 pound of detergent.

Milled Toilet Soap (P-S-621b) (GSA) (Interim)

This specification covers a milled cake soap suitable for use in personal bathing and shall be of but one type.

Milled toilet soap shall be a high grade, milled cake soap, as free as possible from water, either colored or uncolored, and mildly perfumed unless otherwise specified, thoroughly saponified, well compressed in firm, smooth cakes of a size and shape specified in the contract. It shall lather freely when used with cold soft water.

The material shall conform to the detail requirements in the table.

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received.

The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 15 percent.

Milled toilet soap is subject to a possible gain or loss of weight, depending on atmospheric or storage conditions, or both, or on packaging, as a result of fluctuation in the moisture content. Changes in the moisture content result in a corresponding change in the percentage of total solids or anhydrous soap content, or both.

The material should be purchased by net weight, provided the volatile matter at 105° C. is neither above nor below 12 percent.

Deliveries containing more than 15 percent of matter volatile at 105° C., should be rejected without further test.

Detail Requirements for Potash-Linseed Oil Soap (P-S-603a) (GSA)

	Type I		Type II	
	Minimum	Maximum	Minimum	Maximum
Moisture (toluene distillation method) (percent) .....	....	....	....	55
Total matter insoluble in alcohol (percent) .....	....	0.5	....	1.0
Free alkali, calculated as potassium hydroxide (KOH) (percent) .....	....	.05	....	.1
Alkaline salts, calculated as potassium carbonate (K ₂ CO ₃) (percent) .....	....	.1	....	.2
Matter insoluble in distilled water (percent) .....	....	.1	....	.2
Chloride, calculated as potassium chloride (KCl) (percent) .....	....	.3	....	.5
Unsaponified and unsaponifiable matter (percent) .....	....	.4	....	1.0
Anhydrous soap, calculated as potash soap (percent)	20	....	43	....
Total sodium compounds, calculated as Na ₂ O (percent) ..	....	.2	....	.5
Glycerol	1.8	....	4	....
Iodine number (WIJS) of mixed fatty acids derived from the soap	175	....	175	....
Acid number of mixed fatty acids derived from the soap ..	190	205	190	205
Rosin .....	....	None	....	None
Sugar .....	....	None	....	None
Free acid, calculated as oleic acid (percent) .....	....	.1	....	.2

TABLE I—(P-S-626b) (GSA)

	Retained On	Minimum	Maximum
		Percent	Percent
No. 12 sieve	1.5
No. 45 sieve		50	....
No. 100 sieve		90	....

On deliveries containing less than 15 percent of matter volatile at 105° C., settlement should be made on the basis of a product containing 12 percent moisture; that is, 0.88 pound nonvolatile matter should be considered 1 pound of soap.

Powdered Toilet Soap for Dispensers (P-S-626b) (GSA) (Interim)

Powdered toilet soap for use in dispensers shall be of but one type.

Powdered toilet soap for use in dispensers shall be a thoroughly saponified soap in powdered form, made from soda and fats; shall be uncolored and mildly perfumed, unless otherwise specified; shall be a uniform, free-flowing, non-caking powder; and shall lather freely when used with cold, soft water at room temperatures.

Volatile matter at 105° ± 2° C. shall not exceed 6 percent.

The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 percent.

Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 percent.

Matter insoluble in water shall not exceed 0.2 percent.

Anhydrous soda soap shall be not less than 91.0 percent.

Rosin, sugar, and foreign matter shall not be present.

The material shall meet the fineness requirements in Table I.

The percentage of volatile matter at 105° ± 2° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 6 percent of volatile matter at 105° ± 2° C.

The powdered toilet soap covered by this specification is intended for use in dispensers conforming to

type III or IV of Federal Specification FF-D-396 for use with cold, soft water at room temperature.

Powdered toilet soap is subject to a possible gain or loss of weight, depending on atmospheric or storage conditions, or both, or on packaging, as a result of fluctuation in the moisture content. Changes in the moisture content result in a corresponding change in the percentage of total solids or anhydrous soap content, or both.

Powdered toilet soap should be purchased by net weight, provided the volatile matter at 105° C. is neither above nor below 4 percent.

Deliveries containing more than 6 percent of volatile matter at 105° C. should be rejected without further test.

Scouring Powder for Floors (P-P-591a)

Scouring powder for floors shall be of the following types, as specified: Type I—for fine marble floors; Type II—for tile or ceramic and terrazzo floors; Type III—soap scouring compound.

Type I—(For fine marble floors).

Matter volatile at 105° ± 2° C. shall not exceed 10 per cent. The sum of sodium carbonate (Na₂CO₃) and anhydrous soap and/or active anhydrous salt-free synthetic detergent shall not exceed 7 per cent nor be less than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH) shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. The material shall not scratch nor discolor marble.

Type II—(For tile or ceramic and terrazzo floors).

Matter volatile at 105° ± 2° C. shall not exceed 10 per cent. The sum of sodium carbonate (Na₂CO₃) and anhydrous soda soap and/or active anhydrous, salt-free synthetic detergent shall not be less than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 80 per cent nor more than 95 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve.

Type III — (Soap scouring compound).

Matter volatile at 105° ± 2° C. shall not exceed 6 per cent. Carbonated alkali, calculated as sodium carbonate (Na₂CO₃) shall not be less than 6 per cent nor more than 20 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Anhydrous soap and/or active anhydrous salt-free synthetic detergent shall be not less than 3 per cent nor more than 10 per cent. Insoluble siliceous material shall be not less than 60 per cent nor more than 90 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve.

Cleaner Containing Synthetic Detergent for Painted Surfaces (P-C-431)

Cleaner for painted surfaces shall be on one grade and of the following types:

Type 1.—Powder

Type II.—Flake

Type III.—Liquid

Type IV.—Paste

The cleaner shall be a uniform, homogeneous product, free from any objectionable odor, and consisting essentially of synthetic organic detergents. It shall contain

no abrasives or fatty acid soaps and shall not be irritating to the skin.

General requirements.—Each bidder shall submit a sample of the cleaner he will deliver for inspection and testing. The cleaner shall be satisfactory for use in cleaning operations with soft, hard or sea water. The manufacturer shall supply with each package a complete set of clear, concise instructions for the use of the cleaner. The cleaner shall be stable and not lose effectiveness or otherwise deteriorate when stored in closed containers at normal temperatures. pH value of 1.0 per cent distilled water solution (by weight) of the cleaner shall be not less than 5.5 nor more than 10.0. The cleaner shall be free-rinsing. A 0.2 per cent (by weight) solution of the cleaner shall not cause greater than one-half loss in specular gloss of painted surfaces caused by a 0.2 per cent solution of trisodium phosphate. A solution of 50 grams of cleaner per liter, in distilled or sea water, shall exhibit a cleaning efficiency of not less than 80 per cent.

Cleaning Compound (P-C-565) Soap—Abrasive Type for painted surfaces

The product is to be without objectionable odor, and not harmful to the hands. The seller must label each container with directions for use. The product must be capable of being applied either with a damp cloth or sponge. It is to be a uniform soft paste, meeting the following requirements:

Matter volatile at 105°C. shall not exceed 65% by weight. It shall contain not more than 0.1% by weight of free alkali calculated as NaOH. It shall contain not more than 0.5% by weight free acid calculated as oleic acid. Alkaline salts calculated as Na_2CO_3 shall not exceed 5% by weight. Insoluble siliceous matter shall not be less than 25% nor more than 50% by weight. All of the insoluble siliceous matter shall pass through a No. 80 sieve; and not more than 15% shall be retained on a No. 200 sieve. Anhydrous soap

shall be not less than 3.5% by weight.

A special test is provided for determination of abrasive properties. A thin film of the compound is spread over a clear microscopic slide. Another slide is placed over the film and the two slides pressed together, using a slight pressure, and rubbing one slide over the other with a rotary motion. The slides when wiped clean of the compound shall not be scratched.

Grease-Cleaning Compound Solvent-Emulsion Type (P-C-576)

Grease-cleaning compound shall be furnished in two types, Type I, non-phenolic, and Type II, phenolic. The compound shall be uniform liquid and shall be suitable for the purpose intended.

Type I, nonphenolic

Flash point shall be not less than 200° F. (open cup). The compound shall have a neutralization number of not more than 8 (mg. of

KOH to neutralize 1 gm. of compound). The compound shall have no free alkali. The pour point shall be not more than 35°F. The loss in weight shall be not more than 10 per cent after a 24-hour period. Shall be free from phenols. Physical and performance tests covering stability of emulsion, solubility in kerosene and in water, etc., are also provided.

Type II, phenolic

As above except that the material is to contain not less than 15 per cent and not more than 25 per cent phenols by volume, and must pass a phenol ($\text{C}_6\text{H}_5\text{OH}$) limitation test.

Mechanics' Paste, Powder And Hand Detergents (P-D-221a)

Detergents for mechanics' use shall be of three types: Type I —hand grit paste detergent; Type II — hand scouring powder with mineral abrasive and Type III — hand scouring powder with vegetable abrasive. Type I shall be a uniform mixture of detergents and

Table I.—Detail Requirements for Hand Detergents P-D-221a

	<i>Type I</i>		<i>Type II</i>		<i>Type III</i>	
	<i>Min.</i>	<i>Max.</i>	<i>Min.</i>	<i>Max.</i>	<i>Min.</i>	<i>Max.</i>
Matter volatile at 105° ± 2° C.....	....	55.0	....	5.0	....	10.0
Alkaline salts (calculated as sodium carbonate) .....	....	3.0	2.0	5.0	....	0.2
Free alkali (calculated as sodium hydroxide) .....	....	0.1	....	0.1	....	0.1
Free acid (calculated as oleic acid) ...	....	0.5	....	0.5	....	0.5
Anhydrous soda soap and/or active salt-free synthetic detergents.....	8.0	....	17.0	....	35.0	....
Matter insoluble in water (siliceous matter)	25.0	50.0	60.0	76.0	....	none
Fineness of insoluble siliceous matter; Percent retained on:						
No. 40 sieve .....	....	none	....	none	....	....
No. 60 sieve	10.0	20.0	....	5.0	....	....
No. 80 sieve	30.0	45.0	....	....	....	....
No. 100 sieve	35.0	55.0	....	30.0	....	....
No. 200 sieve	60.0	....	....	60.0	....	....
Matter insoluble in water (cornmeal) ....	....	....	....	....	40.0	62.0
Fineness of finished detergent; Percent retained on:						
No. 20 sieve .....	....	....	....	....	....	none
No. 45 sieve .....	....	....	....	....	50.0	....
No. 100 sieve .....	....	....	....	....	90.0	....
Rosin .....	....	....	....	5.0	....	5.0
Sugar .....	....	none	....	none	....	none
Volatile hydrocarbons (pine oil).....	....	....	....	....	3.0	5.0

mineral abrasives in paste form. Type II shall be a uniform mixture of detergents and mineral abrasives in powder form. Type III shall be a uniform mixture in powder form of thoroughly saponified soap and/or active salt-free synthetic detergents, and pine oil. The detergent shall not contain any mineral abrasives such as lava, pumice, sand, quartz, etc.

Detergents for mechanics' use shall be satisfactory for removing oil, grease, paint, printing inks and other occupational soil from the hands without harmful effect on the skin. They shall lather freely when used with fresh water at room temperature. Detergents in powder form shall be free-flowing and non-caking when used in dispensers conforming to the requirements of Federal Specification FF-D-396 for types III and IV.

The odor shall not be objectionable. If desired, it shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries.

For Type I detergent, the percentage of matter volatile at $105^{\circ} \pm 2^{\circ}$ C. will be computed on the basis of the grit paste detergent as received, but with all other constituents will be calculated on the basis of material containing 50.0 per cent of matter volatile at $105^{\circ} \pm 2^{\circ}$ C. Types II and III shall have all constituents reported on the basis of the sample as received.

Special Detergents (P-D-236)

Detergents for manual cleaning of aluminumware shall be of the following classes:

Class A. Non - abrasive cleaner.

Class B. Abrasive cleaner.

The material used in Class A non-abrasive cleaner shall be suitable for any type of manual washing where abrasiveness is not desired, and shall be substantially uniform in

appearance throughout. It shall be free from objectionable odor, and shall dissolve readily in tepid water. Cleaner may be supplied in either powder, granule or chip form provided it conforms to the detailed requirements.

The material used in Class B abrasive cleaner shall be suitable for any uses requiring a manual cleaner where soil adheres too tenaciously for non-abrasive cleaners. It may be supplied in the form of a solid, a paste, or a combination of any two of the above. Combinations of metal wools and soaps may be supplied. The cleaner shall be free from objectionable odor and from poisonous or irritant chemicals.

Each bidder shall submit with his proposal a sample of the material that he proposes to furnish. Each sample shall be labeled to show the amount recommended for softening 10 gallons of water containing 10 grains (171 p.p.m.) of hardness, calculated as CaCO_3 , and may be used by the inspector or purchasing officer in the recommended proportions for determining the performance or cleaning ability of the material.

Samples from deliveries shall be subjected to similar tests. If specified by the purchasing officer, the material, when used in the proportions recommended by the bidder, shall be at least equal in cleaning ability to a standard sample furnished, or indicated, by the purchasing officer.

Class A. Non - Abrasive Cleaner shall conform to the following detail requirements:

Turbidity—The turbidity of the cleaner solution shall conform to the test described in paragraph F-2b (2). (See complete Specification.) **Corrosion**—When tested by the method described in paragraph F-2f (2), the cleaner solution shall be without visible action on bare or anodic oxide-coated aluminum alloy. **Water Softening Capacity**—A suds which is stable

for not less than 5 minutes shall be formed when the material is tested as described in paragraph F-2e. **Hydrogen Ion Content**—The pH of a 1 per cent solution by weight of the cleaner in distilled water shall not exceed 10.5 when measured as indicated in paragraph F-2h. **Cleaning Ability**—The material shall clean satisfactorily when tested as indicated in paragraph F-2a. **Relative Cost**—The relative cost of the cleaner shall be determined from the product of the delivered price per pound of the cleaner and the number of pounds of the cleaner required to treat 1000 gallons of water containing 10 grains (171 p.p.m.) per gallon of hardness, calculated as CaCO_3 . The amount of cleaner used in this computation shall be that required to give the concentration used in paragraphs F-2b (2) and F-2e of this specification.

Class B. Abrasive Cleaner shall conform to the following detail requirements: **Abrasion**—When tested by the method described in paragraph F-2i (See complete Specification) the cleaner shall produce no undesirable scratching. **Corrosion**—When tested by the method described in paragraph F-2f (3), the cleaner shall be without visible action on bare or anodic oxide-coated aluminum alloy. **Rinsibility**—When tested by the method described in paragraph F-2j, the cleaner shall be removed completely from a glass plate. **Cleaning Ability**—The material shall clean satisfactorily when tested as indicated.

Sweeping Compound (P-S-863)

Sweeping compound shall consist of a uniform mixture of the materials as specified for each type and shall be artificially colored or uncolored as specified by the purchaser. If desired, shall conform to the color of a sample mutually agreed upon by buyer and seller. The material shall not stain flooring surfaces on which it is used.

Type I. — Sawdust- Sand- Mineral Oil.

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The material shall not give off flammable vapors when tested according to paragraph F-2b. Matter volatile at 105-110° C. shall be not more than 10 per cent by weight. Refined mineral oil (such as paraffin oil) shall be not less than 15 per cent and not more than 20 per cent by weight. The acid number (milligrams of KOH per gram of sample) of the extracted oils shall not exceed 17. The saponification number (milligrams of KOH per gram of sample) of the extracted oils shall not exceed 20. Clean, fine, feldspar sand shall be not less than 35 per cent and not more than 50 per cent by weight. Not more than 1 per cent by weight of sand (based on sand content) shall be retained on a No. 20 sieve when tested according to paragraph F-2k. The remainder shall be finely ground sawdust. Not more than 1 per cent by weight of sawdust (based on sawdust content) shall be retained on a No. 8 sieve when tested according to paragraph F-2k.

Type II — Sawdust-Sand-Wax emulsion.

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The material shall not give off flammable vapors when tested according to paragraph F-2b. Matter volatile at 105-110° C. shall be not more than 12 per cent by weight.

Clean, fine, feldspar sand shall be not less than 60 per cent and not more than 70 per cent by weight. Not more than 1 per cent by weight of sand (based on sand content) shall be retained on a No. 20 sieve when tested according to paragraph F-2k. Finely ground sawdust shall be not less than 5 per cent and not more than 10 per cent by weight. Not more than 1 per cent by weight of sawdust (based on sawdust content) shall be retained on a No. 8 sieve when tested according to paragraph F-2k. The

remainder shall be waxes and emulsifying agents.

**Liquid Automobile Polish
(P-P-546)**

Shall be suitable for use on lacquer, baked enamel and synthetic enamel finishes. Shall have no objectionable odor. Shall be a stable aqueous emulsion containing a suitable abrasive in suspension. The polish shall be a free-flowing fluid that can readily be applied with a cotton cloth and shall spread easily. Non-volatile matter, total solids, shall be not less than 25 per cent by weight. Ash content, based on non-volatile, shall be not less than 35 per cent nor more than 50 per cent by weight. No free caustic alkali. Neutralization number shall be not more than 5. All of the material shall pass through a No. 200 sieve, and not less than 95 per cent, based on ash content, shall pass through a No. 325 sieve. Volatile matter shall be essentially water. Physical and performance tests are also specified.

**Liquid Furniture Polish
(P-P-552)**

The polish shall be free from abrasives and suitable for use on finishes on wood and metal furniture. It shall have no objectionable odor. It shall be a stable colloidal emulsion of oil in water. It shall be a free-flowing fluid that can readily be applied with a cotton cloth and easily spread. Non-volatile matter shall be not less than 40 per cent by weight, and shall be essentially a well-refined petroleum oil. Ash content, based on non-volatile matter, shall be not more than 1 per cent by weight. Volatile matter shall be essentially water. No free caustic alkali shall be present. The saponification number shall be not more than 30. Physical and performance tests are also specified.

Metal Polish (P-P-556a)

Metal polish shall be of the following types:

- Type I. Powder.
- Type II. Liquid
- Type III. Paste.

Metal polish of each type shall be of but one grade. It shall be a product, with or without a finely divided abrasive, suitable for the removal of tarnish from brass, nickel, copper, and other metals and capable of producing a luster thereon.

All types of metal polish shall have good tarnish-removing properties, good luster-producing properties, shall give good protection to the polished surface against tarnishing influences, and shall be so constituted and prepared that, by reason of application and polishing, they—

- (1) Shall not scratch metals.
- (2) Shall not leave the metal discolored or caked with abrasive material.

- (3) Shall not be detrimental in any manner to metals.

- (4) Shall not show any unnecessary caking of type I or III polish in the containers. The abrasive material in liquid (Type II) polish, shall show no caking in the container, which cannot be readily put into suspension by thoroughly shaking the containers. The abrasive material shall be of such particle size that 100 per cent will pass through a No. 200 sieve.

Metal polish shall be free from acids, cyanide of potassium or other cyanides, grit, or other ingredients having detrimental effects on metals. Shall clean quickly, leaving a bright polished surface, with a full luster for the material being polished. When so specified the tarnish-removing and luster-producing properties shall be equal in quality to those of a standard sample furnished or approved by the purchaser. The polished surface shall remain free from corrosion or discoloration for a period of at least 24 hours.

Polish shall have good keeping qualities and be guaranteed for 1 year from the date of actual receipt at point of delivery. During the guaranty period the successful bidder shall replace without cost any metal polish which through deterioration, evaporation, caking in the

container, or other causes, becomes unfit for use. Replacement metal polish shall also be guaranteed for 1 year from date of receipt. The metal polish will be stored in original unopened shipping containers, not subjected to freezing temperature or to excessive artificial heat. The amount of volatile matter, at 105° to 107° C., in either type II or III polish, shall not exceed 70 per cent by weight, of the polish. The flammability of the liquid contents of types II and III polishes shall not be not less than 39° C.

Silver Polish (P-P-571b)

Silver polish shall be of the following types:

- Type I. Liquid.
- Type II. Paste.
- Type III. Powder.

Silver polish shall be of but one grade, and shall consist solely of finely ground diatomaceous or infusorial earth, prepared as a powder (Type III) or suitably compounded with a neutral soap, to produce a liquid (Type I) or paste (Type II).

All types of silver polish shall have—

(a) Good tarnish-removing properties.

(b) Good luster-producing properties and shall be so constituted and prepared that by reason of application and polishing, they—

(1) Shall not scratch silverware.

(2) Shall not leave silver discolored.

(3) Shall not leave any residue (which will cause discoloration) not removable by washing in warm soapy water.

(4) Shall not show any unnecessary caking of Type II or III polish in the containers. The abrasive material in liquid (Type I) polish, shall show no caking in the container which cannot be readily put into suspension by thoroughly shaking the containers.

The diatomaceous or infusorial earth in all types of silver polish shall be of such particle size that 100 per cent will pass through a No. 200 sieve.

Silver polish shall be free from acids or cyanides. Shall clean quickly leaving a bright polished surface, with a full luster for the material being polished. It shall have good keeping qualities and be guaranteed for 1 year from the date of actual receipt at point of delivery. During the guaranty period the successful bidder shall replace, without cost, any silver polish which through deterioration, evaporation, caking in the container or other causes, becomes unfit for use. Replacement silver polish shall also be guaranteed for 1 year from date of receipt. The silver polish will be stored in original unopened shipping containers not subjected to freezing temperature or to excessive artificial heat. The amount of volatile matter, at 105° to 107° C., in either Type I or II polish, shall not exceed 70 per cent by weight, of the polish. The flammability of the liquid contents of Types I and II polishes shall be not less than 39° C.

Water Emulsion Floor Wax (P-W-151b) Interim

Water emulsion floor wax covered by this specification shall be of but one grade, having slip-retardent properties.

Water emulsion floor wax furnished under this specification shall be a product which has been tested and has passed the qualification tests.

Nonvolatile matter (total Solids).—The nonvolatile content shall be not less than 12 per cent.

Volatile solvents.—The water emulsion floor wax shall be free from petroleum distillate, and other organic volatile solvents. The distillate shall consist of not less than 99 per cent water.

Free oil.—There shall be not more than 400 milligrams of free oil per 100 milliliters of sample.

pH range.—The pH range of the water emulsion floor wax shall be not greater than 10.0 nor less than 8.0.

Free caustic alkali.—No free caustic alkali shall be present.

Viscosity.—The viscosity of the water emulsion floor wax shall be not more than 1.90 centistokes at 37.8°C. (100°F).

Specular gloss.—The specular gloss of the dried film shall be not less than 80 when applied to a black glass plate having a gloss of 95.

Drying time and film characteristics.—The water emulsion floor wax shall dry hard to touch in not more than 20 minutes. The film produced shall show no sign of whiteness, shall have a smooth finish, and shall be clear, free from particles and practically colorless.

Sediment.—The amount of sediment present in the water emulsion floor wax shall be not more than 0.1 per cent by volume and shall be soft and free from grit.

Leveling, spreading and wetting.—A single film of water emulsion floor wax shall dry with a smooth, uniform, glossy film with no tendency to pull up in ridges or puddles. When the second film of water emulsion floor wax is applied, it shall wet the surface of the initial film evenly and shall dry with a smooth, uniform, glossy film with no tendency to pull up in ridges or puddles. The specular gloss of the second film shall be not less than the original film when the second film is applied over the single film.

Wet abrasion.—The dried film shall show no evidence of removal, whiteness, or discoloration after 25 oscillations.

Removability.—The dried film on the test panel shall be completely removed after 75 oscillations.

Flexibility and cohesion.—The dried films shall be flexible and shall cohere firmly to the surface without checking, cracking, or peeling.

Water spotting.—The dried film shall show no separation from the surface of the panel and, no whitening after slight buffing of the film.

Tackiness.—The dried film shall not be tacky.

Film scuff.—A film of the water emulsion floor wax shall scuff

and be capable of being buffed to remove the scuff marks. A film which does not scuff shall not be considered as meeting this requirement.

Odor.—The water emulsion floor wax shall not have an offensive odor nor shall it develop an offensive odor upon storage in the original unopened container.

Compliance with Underwriters' Laboratories, Inc.—The bidder shall submit with his sample for qualification, evidence that the water emulsion floor wax he proposes to qualify under this specification conforms to the requirements of the Underwriters' Laboratories, Inc., as regards casualty hazards, except that the slip-retardant properties of the wax shall be such that it will give a reading of not less than .70 on the slip-retardant tester used by the Underwriters' Laboratories, Inc.

In lieu thereof, a certified test report from an independent testing laboratory shall be submitted as evidence that tests conducted in accordance with the tests required by the Underwriters' Laboratories, Inc., show that the material meets all the requirements including the exception on anti-slip properties. This does not absolve the manufacturers or suppliers from complete compliance with additional requirements of this specification.

Shaving Cream and Soap (FFF-C-641)

Shaving soap and cream shall be of the following types and classes:

Type I. Soap:

Class (A)—Cakes.

Class (B)—Stick.

Class (C)—Powder.

Type II. Cream:

Class (A)—Lather cream.

Class (B)—Brushless cream.

Shaving soaps, Type I, shall be high-grade products free of caustic alkalinity that yield a heavy, creamy lather that will remain moist upon the face until the shaving is completed. In the case of Class B (stick), the soap shall adhere to the

face when the stick is moistened and rubbed thereon. In the case of class C (powder), the material shall be free-flowing and shall not cake in the container.

Lather cream — Class A, shall be a soft, uniform cream or paste free from free alkali. It shall distribute well into the bristles of a shaving brush and shall yield a heavy creamy lather that will remain moist upon the face until the shaving is completed.

Brushless cream—Class B shall be a soft, uniform cream or paste free from free alkali.

Type I. Shaving soap, Classes A, B, and C—

Color—shall be as specified by the purchaser. **Odor**—shall be pleasant and shall be as specified by the purchaser. **Lathering quality**—shall be satisfactory. Shall conform to the following test:

Shake 100 ml of a 0.2 per cent (based on the nonvolatile matter) solution of the soap (Type I, classes, A, B, and C and Type II, class A) in distilled water at room temperature in a stoppered 200-ml graduated cylinder 30 times in 15 seconds, and let stand at room

temperature for 1 hour. The volume of foam above the liquid shall extend to the top of the cylinder and shall not decrease more than 10 per cent of its original volume in 1 hour.

Caking (Class C only)—The material shall be free-flowing and shall not cake in a closed container at room temperature.

Type II. Shaving cream, Classes A and B—

Color—shall be as specified by the purchaser. **Odor**—shall be pleasant and shall be as specified by the purchaser.

Lathering quality (Class A only)—shall be satisfactory. Shall conform to the test described above.

Type I. Shaving soap, Classes A, B, and C—shall conform to the detail requirements shown in the accompanying table.

The percentage of volatile matter shall be computed, and reported on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed volatile matter content of 10 per cent for Classes A and B and of 2 per cent for Class C.

Detail Requirements for Shaving Soap (FFF-C-641)

TYPE I	Classes A and B cake and stick		Class C powder	
	Min.	Max.	Min.	Max.
	Per Cent	Per Cent	Per Cent	Per Cent
Matter volatile at 105° C.....	—	10	—	2
Matter insoluble in hot 95 per cent ethyl alcohol.....	—	.8	—	.8
Free alkali	—	None	—	None
Free fatty acids (calculated as stearic acid).....	—	1.0	—	1.0
Matter insoluble in hot distilled water.....	—	.4	—	.4
Anhydrous soap (calculated as potash soap).....	87	—	96	—
Amount passing a No. 20 sieve.....	—	—	100	—

Detail Requirements for Shaving Cream (FFF-C-641)

TYPE II	Class A lather cream		Class B brush- less cream	
	Min.	Max.	Min.	Max.
	Per Cent	Per Cent	Per Cent	Per Cent
Moisture (toluene distillation method).....	—	50	—	70
Matter insoluble in hot 95 per cent ethyl alcohol.....	—	.3	—	—
Free alkali	—	None	—	None
Free fatty acid (calculated as stearic acid).....	—	6.5	15	—
Matter insoluble in hot distilled water.....	—	.3	—	—
Anhydrous soap (calculated as potash soap).....	40	—	—	—

Caustic Soda for Cleaning (P-S-631a)

Caustic soda shall be of but one grade. It shall be furnished in airtight containers (13-ounce cans or drums) in flake, ground, or lump form, as specified in the invitation for bids. It shall conform to the following detail requirements:

Sodium hydroxide (NaOH) shall be not less than 95 per cent.

Carbonate, calculated as sodium carbonate (Na_2CO_3), shall not be more than 2 per cent.

Technical Trisodium Phosphate (O-T-671a)

Technical trisodium phosphate shall be a white, uniform product and may be either granular, flake, or crystalline.

It shall contain not less than 98 per cent of trisodium phosphate calculated as $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$, from the total phosphoric anhydride (P_2O_5). It shall conform to the following detail requirements:

	Minimum Per Cent	Maximum Per Cent
Trisodium phosphate, calculated as $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$, from total P_2O_5	98	—
Total alkalinity to methyl orange, calculated as Na_2O	16	19
Phosphoric anhydride (P_2O_5)	18.3	—
Matter insoluble in water	—	0.1

Stove Polish (P-P-576)

Stove polish shall produce a deep, lustrous black color when applied as directed by the manufacturer. It shall produce no odors upon burning and shall produce a durable coating that will not readily be burned off.

Type I.—Polish, stove, liquid, shall be of such consistency that the addition of a fluid will not be necessary in order to make it free-flowing. The vehicle of the polish shall be a non-inflammable liquid.

Type II. — Polish, stove, paste, shall be non-inflammable and shall be of such consistency that it can be readily applied.

Type III. — Polish, stove, powder, shall readily form a paste with water, and shall be non-inflammable.

Type IV. — Polish, stove, cake, shall readily disintegrate in water and form a paste and shall be non-inflammable.

Laundry Soda (Washing Soda) (P-S-641a)

Laundry soda shall be a white uniform powder composed of sodium carbonate and sodium bicarbonate. It shall conform to the following detail requirements:

	Maximum Per Cent	Minimum Per Cent
Total alkalinity, calculated as Na_2O	43	39
Sodium bicarbonate (NaHCO_3)	50	35
Sodium carbonate (Na_2CO_3)	50	35
Matter insoluble in water .....	.1	—

Insecticide, 75 Percent DDT Water-Dispersible Powder (O-I-568)

This specification covers one grade of insecticide, water-dispersible powder, 75 percent dichlorodiphenyltrichloroethane (DDT).

Insecticide, water-dispersible powder, 75 percent DDT shall be prepared from dichlorodiphenyltrichloroethane (DDT) together with such biologically inert modifying and conditioning agents as are needed to meet the requirements.

Dichlorodiphenyltrichloroethane (DDT) shall conform to the requirements for grade B of Federal Specification O-D-370.

The finished insecticide shall contain not less than 36.0 percent organic chlorine when tested, shall be free flowing, of a light color such as white, cream, or light gray, and shall be readily wettable with water to provide dispersions suitable for use as residual-effect insecticide sprays.

Any foam built up in the preparation of test suspensions shall not have such copiousness, stability, or other properties as would prevent the completion of tests.

The surface-mean particle di-

ameter of the insecticide powder, determined as specified in 4.2.2.1, shall be not greater than 5.0 microns.

Maximum diameter (under simulated storage conditions conducive to caking).—Not less than 98 percent of the insecticide powder shall pass through a 74-micron (U. S. Standard No. 200) sieve, and not less than 100.0 percent shall pass through a 1,000-micron (U. S. Standard No. 18) sieve.

Not less than 95 percent of the insecticide powder incorporated in a suspension shall pass through a 250-micron (U. S. Standard No. 60) sieve.

A suspension shall have a pH value not lower than 5.0 and not higher than 10.0. If pH is 8.0 or above, not more than 10.0 ml. of half normal by dichloric acid shall be required to neutralize the alkalinity of a 20.0-gm. sample when titrated.

The product shall be clean and uniform and free from any defects which may impair its utility.

Federal Specification For Insecticide-Concentrate; Liquid, Water-Emulsifying (DDT—Nonexplosive Solvent— Emulsifying Agent) (O-I-558)

Appearance. — The insecticide-concentrate shall be clear, homogeneous, and free from particles of undissolved DDT crystals or foreign matter. The appearance of the concentrate shall not be affected when tested as specified.

Chlorine content.—The insecticide-concentrate shall contain a minimum of 120 milligrams of chlorine per milliliter.

Emulsion stability. — The emulsions formed shall show not more than 5 milliliters of separation when tested at 80°F., nor more than 10 milliliters of separation when tested at 120°F., 30 minutes after formation and after reformation.

Flash point.—The flash point of the finished concentrate shall be not below 140°F.

Staining properties. — There shall be no residual stain when the

insecticide-concentrate is tested as described.

Residual odor.—There shall be no more than a slight, mild residual odor when the insecticide-concentrate is tested as described.

Distillation range.—The solvent shall have an initial point not less than 300°F., and an end point not higher than 550°F.

Effect on metals.—The insecticide-concentrate shall cause no more than a slight discoloration of mild steel strips.

Effect on plastics.—The insecticide-concentrate shall cause no crazing or softening of strips of polymethyl methacrylate.

Chlorine content.—With all ingredients at 77°F., pipette accurately 5 milliliters of the concentrate into a 100-milliliter volumetric flask and make to volume with 99 percent isopropyl alcohol. After mixing well, pipette accurately 10.0 milliliters of this alcoholic solution into a clean, dry, 300-milliliter flask with a standard tapered neck, add 15 milliliters of 99 percent isopropyl alcohol and 2.5 grams of metallic sodium cut into small pieces, and swirl the flask in order to mix its contents. Connect to a water-cooled reflux condenser and boil gently for at least ½ hour, swirling occasionally. Decompose the excess sodium by cautiously adding 10 milliliters of 50 percent isopropyl alcohol through the condenser at a rate of 1 to 2 drops per second. Boil for an additional 10 minutes and then add 60 milliliters of distilled water. Add 5 milliliters of 30 percent hydrogen peroxide, a few drops at a time, through the top of the condenser. Heat the mixture in the flask to boiling and boil for 15 minutes. Add 5 milliliters more of 30 percent hydrogen peroxide and boil again for 15 minutes. Cool to room temperature, add 2 to 3 drops of phenolphthalein solution, neutralize by adding nitric acid (1:1), and add 10 milliliters of diluted acid in excess. Cool and transfer the solution quantitatively to a small separatory funnel and shake vigorously with 15

milliliters of iso-amyl alcohol-ethyl ether solution (1:1). Draw off the aqueous layer into a second separatory funnel and extract again with another 15-milliliter portion of the extract mixture. Draw off the aqueous layer into a 400-milliliter beaker. Wash the two organic extracts successively with 10 milliliters of distilled water, and add the wash water to the beaker. Repeat with a second 10-milliliter portion of distilled water, and add dropwise, with stirring, a measured excess (25 ml. approximately) of 0.1N silver nitrate solution. Coagulate the precipitate by heating on a steam bath for approximately ½ hour. Cool to room temperature and filter through a No. 42 Whatman filter paper and wash thoroughly with distilled water, receiving the filtrate in a 500-milliliter Erlenmeyer flask. Add 5 milliliters of ferric ammonium sulfate indicator solution and titrate the excess AgNO_3 with 0.1N KCNS solution. Compute the net number of milliliters of 0.1N AgNO_3 consumed by the sample.

Then if, a = milligrams of chlorine per milliliters of concentrate, and
 b = net number of milliliters of 0.1N AgNO_3 consumed by the sample
 $a = b \times 7.092$.

Note 1.—A blank determination (without sample) should be made following the exact procedure given above but limiting the 0.1N AgNO_3 solution to 5 milliliters in order to obtain a chloride correction value for all reagents used.

Stability at 80° ± 5°F.—Bring the sample of liquid concentrate and 80 milliliters of hard water to a temperature of 80° ± 5°F. Then pipette 20.0 milliliters of the concentrate into the hard water, forming a 1 to 4 dilution. Stir vigorously by hand (using a stirring rod) while the concentrate is being added and for 60 seconds afterwards. Record the time of initial formation. Pour the emulsion thus formed into a 100-milliliter graduated mixing cylinder, stopper the cylinder, and set it aside for exactly 30 minutes (note 2). Immediately after that period examine the emulsion carefully under strong transmitted light for signs of separation of phase or

sediment and record the percentage separation by volume if present. Allow the emulsion to stand at the test temperature for 24 hours. Then reform the emulsion by inverting and righting the stoppered cylinder through 30 complete cycles. Exactly 30 minutes after the emulsion has been reformed, examine again under strong light and record the results.

Note 2.—Breaks in the emulsion are often difficult to detect when they first occur. If the emulsions are examined carefully once or twice during the 30-minute period after formation, observation of the darkening or lightening of the various portions will make the detection of the initial break easier. These examinations should be made by holding the cylinder in front of a strong light.

Hard water.—The hard water specified shall have the following composition:

$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	0.2345 gram.
$\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$	0.268 gram.
H_2O (distilled) to make.....	1 liter.

Stability at 120° ± 5° F.—The test procedure specified shall be repeated with the exceptions that (1) the ingredients and emulsion shall be kept at a temperature of 120° ± 5°F., and (2) the emulsions shall be reformed after 2 hours rather than 24 hours.

Flash point.—The flash point shall be determined with the Tag closed tester in accordance with method 110.1.3 of Federal Specification VV-L-791.

Staining properties and residual odor.—A 6-inch square of bleached cotton sheeting shall be immersed in the diluted concentrate (1 part of the concentrate to 4 parts of water), the sheeting thoroughly wetted, wrung to remove excess liquid, and hung up to dry for 48 hours in a well ventilated room. At the end of 48 hours, the treated section of sheeting shall be examined and compared to a similar untreated piece of sheeting for staining and residual odor.

Distillation range.—Approximately 250 grams of the concentrate shall be distilled under reduced pressure (29 inches of mercury approximately). Ten to fifteen grams

of anhydrous sodium sulfate shall be added to the distillate, the container shaken, corked, and allowed to stand overnight to remove moisture. The distillate shall then be filtered and the filtrate distilled in accordance with method 100.1.6 of Federal Specification VV-L-791.

Effect on metals.—Place a polished strip of mild steel (S.A.E. 1020) in a clean, dry test tube, add sufficient liquid concentrate to immerse the specimen completely, and stopper the test tube with a clean cork. Place in an oven maintained at $122^{\circ} \pm 5^{\circ}\text{F}$. After 3 hours, remove the strip, rinse with sulfur-free acetone, and examine for signs of corrosion (discoloration or pitting).

Effect on plastics.—Place a strip of polymethyl methacrylate in a clean 300-milliliter Erlenmeyer flask. Add 100 milliliters of emulsion prepared as specified in paragraph F-3c(1), stopper the flask, and place on a mechanical agitator. After 4 hours, remove the strip, rinse under running water, allow to dry, and examine for any visual effects due to exposure to the emulsion.

Toilet Soap—Borax Compound P-S-628a

This specification covers soap-borax powder mixtures suitable for use in dispensers and shall be of the following types:

Type I.—Without lanolin

Type II.—With lanolin

Soap-borax powder for use in dispensers shall be a uniform mixture of a thoroughly saponified soap and borax ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$), free from grit and harsh abrasives, and shall be uniform, free-flowing, and noncaking.

The composition of soap-borax powder shall comply with the

TABLE I.—Composition (P-S-628a)

	Type I		Type II	
	Mini- mum	Maxi- mum	Mini- mum	Maxi- mum
Anhydrous soda soap (percent).....	23.0	27.0	35.0	39.0
Borax (calculated as $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) (percent).....	72.0	77.0	57.0	63.0
Lanolin (percent) .....	...	0.0	2.5	3.5
pH value	9.0	10.2	8.5	9.5
Matter insoluble in water (percent).....	...	0.2	...	0.3

TABLE II.—Fineness (P-S-628a)

Retained on	Type I		Type II	
	Mini- mum	Maxi- mum	Mini- mum	Maxi- mum
No. 12 U. S. standard sieve (percent) .....	...	0.00	...	...
No. 30 U. S. standard sieve (percent) .....	...	...	...	0.10
No. 45 U. S. standard sieve (percent)	5	...	5	...
No. 100 U. S. standard sieve (percent)	45	...	20	...

requirements specified in table I.

Compute the percentages of the constituents on the basis of the material as received, calculating the borax as the decahydrate — $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$. Borax ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) effloresces in warm, dry air. If this has occurred, the sum of the percentages from the computation on the "as-received" basis will exceed 100. If the results are greater than 100 percent, calculate the percentages of anhydrous soap and of borax ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) by the following formula:

$$\text{Percent on 100-percent basis} = \frac{A \times 100}{S}$$

where: A = percentage found

S = sum of the percentages on the "as-received" basis

The soap-borax powder shall produce not less than 100 milliliters foam when tested.

The soap-borax powder shall comply with the fineness requirements specified in table II.

The soap-borax powder shall be uncolored or tinted.

Rosin, sugar, and other foreign matter shall not be present.

Unless otherwise specified, the soap-borax powder shall be mildly perfumed.

Dishwashing Compound (For Use in Mechanical Dishwashing Machines) P-D-425 (Navy, Ships) (Interim)

This specification covers dishwashing compounds suitable for use

in spray-type mechanical dishwashing machines.

Dishwashing compound shall be of the following types:

Type I—For hard water.

Type II—For soft water.

Dishwashing compound shall be manufactured from materials of at least technical grade and shall include any free-flowing form such as powder, granule, and flake. It shall be suitable for use in spray-type mechanical dishwashing machines, and shall comply with the following requirements:

When tested as specified in 4.5.10 not more than 5 percent of the compound shall be retained on a No. 10 standard sieve.

Dishwashing compound shall be free from objectionable odor in either dry form or in solution.

The product shall produce no abrasion or undue wear on surfaces of utensils, dishes, or dishwashing machines in service use.

The ingredients used in formulating dishwashing compound shall not be contaminated with toxic amounts of poisonous compounds such as those of arsenic, lead, mercury, antimony, etc.

Dishwashing compound shall be formulated from alkaline salts, sequestering agents, and wetting agents in proper proportions to provide a compound which will meet all the requirements of this specification. Matter insoluble in distilled water shall not exceed 1-percent by weight.

When tested as specified, a solution of the compound shall have an initial pH of not less than 10.5 and not higher than 12.5. The addition of 10 ml. of 0.1N hydrochloric acid shall not reduce the pH of the solution to less than 9.0.

When used in prescribed concentrations, the foaming of the com-

pound shall not interfere with the normal operations of a dishwashing machine.

The hard water shall be softened completely as indicated by the absence of turbidity.

The weight of precipitate obtained shall not exceed 15 mg.

Aluminum test specimens shall not be discolored or etched, nor shall a dense white film be formed on the surfaces. Slight dulling of the surfaces or formation of a faint white film on the test specimens, shall not be interpreted as evidence of non-conformity with this requirement.

The particle size of mechanical mixture of ingredients normally shall be uniform in order to minimize segregation of the ingredients. Not less than 95.0 percent of the material shall fall within one of the following ranges, as previously designated by supplier:

Range	Passing	Retained
A	No. 10 and No. 120	
B	No. 16 and No. 170	
C	No. 20 and No. 200	
D	No. 25 and No. 270	

Floor Wax (P-W-158)

New proposed revised Federal Specification.

The product shall dry to a film that polishes easily to a hard lustrous flexible surface. It shall not be so highly colored as to stain the surface; and shall dry within 45 minutes to a semitransparent non-tacky film which shall show no signs of whiteness. Floor wax shall consist essentially of blended waxes in a volatile organic solvent. It shall be free from rosin.

Type I (liquid)—Shall be a heavy bodied liquid mixture of suitable consistency to permit freedom of application at 20° to 25° C. There shall be no appreciable settling of the suspended material. The liquid wax

shall be smooth and shall be free from hard particles and granules. There shall be not less than 11 per cent, by weight, of non-volatile matter in the liquid wax. The nonvolatile matter shall meet the following requirements:

	Minimum	Maximum
Softening point	75° C.	—
Ash content, per cent.	—	0.5

The solvent shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. Physical and performance tests are also provided.

Type II (paste)—Shall be a semi-solid material at 20° to 22° C. There shall be no separation of liquid from paste. The paste shall be smooth and shall be free from hard particles and granules. There shall be not less than 20 per cent, by weight, of non-volatile matter in the paste wax. The nonvolatile material shall meet the following requirements:

	Minimum	Maximum
Softening point	71° C.	—
Ash content, per cent.	—	0.5

The vehicle shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. Physical and performance tests are also provided.

Floor Sealer (Lacquer Type) (TT-S-171)

The manufacturer is given wide latitude in the selection of raw material and processes of manufacture, provided that the sealer produced meets the requirements and tests. The product, when applied in accordance with directions shall satisfactorily seal the pores of the wood leaving the wood surface in such

condition as to provide a satisfactory foundation for a finishing material such as varnish, liquid or paste wax or water-emulsion wax. It shall be "natural" in color and of sufficient fluidity to permit application with a bristle brush or lamb's wool mop.

The floor sealer shall be a clear liquid free from sediment or suspended matter and shall be of such fluidity that no further thinning will be required. It shall meet the following requirements:

Nonvolatile matter.—Not less than 14 per cent.

Set-to-touch. In not more than 15 minutes.

Dry hard and tough.—In not more than 3 hours.

Nitrocellulose.—Not less than 20 per cent by weight of the non-volatile content.

Toughness.—Air-dried film on metal shall withstand rapid bending over a rod 3 mm. (1/8 inch) in diameter.

Viscosity.—Not more than 0.220 poise.

Performance tests are also specified.

Wood and Cork Floor Sealers (TT-S-176a)

Floor sealers shall be furnished in one grade and two classes for use on wood and cork floors as follows: Class 1 — minimum non-volatile content 40 per cent; Class 2 — minimum nonvolatile content 25 per cent. The manufacturer is given wide latitude in the selection of raw materials and processes of manufacture, provided that the sealer produced meets the requirements and tests described in this specification.

When applied in accordance with directions the product shall satisfactorily seal the pores of the flooring by absorption, leaving no apparent surface film and shall provide a satisfactory foundation for a finishing material such as varnish, liquid or paste wax, or water-emulsion wax. Unless otherwise specified, floor sealer shall be furnished

Requirements for Non-Volatile in P-W-158

	Minimum	Maximum
<i>Type I</i>		
Softening Point	75° C	—
Acid Value	—	0.5
<i>Type II</i>		
Softening Point	71° C	—
Ash Content %	—	0.5

"natural" in color. Floor sealer shall have sufficient fluidity to permit application with a bristle brush or lamb's wool mop.

Both classes of sealers shall be nonpigmented materials and shall be capable of being thinned with turpentine or mineral spirits. The respective sealers shall meet the following requirements: *Nonvolatile matter*—Class 1, not less than 40 per cent; Class 2, not less than 25 per cent. *Set to touch*—in not less than 1 hour and not more than 4 hours. *Dry, hard and tough*—in not more than 18 hours. *Water test*—The sealer shall meet specified cold water test.

Toughness—Shall pass a 75 per cent Kauri reduction test at 25° C. (77° F.).

Flash point—Shall be not below 30° C. (86° F.). (Closed-cup.)

Viscosity at 25° C.—Class 1, not more than 0.50 poise; Class 2, not more than 0.220 poise.

Skinning—Shall be negligible when received and after 48 hours in a tightly closed half-filled container.

Odor—The odor in the can, during drying, and/or after drying shall not be abnormally offensive or disagreeable.

Performance tests are also specified.

Liquid Insecticide (Fly Spray) (O-I-541a)

The insecticide shall not cause irritation to man nor be poisonous to man when applied in the usual manner. It shall have no greater detrimental action on metal or paint surface than a specified test solvent. It shall have no objectionable odor. It shall be formulated from a petroleum distillate base, free from kerosene odor and practically free from all odor, shall be clear and free from suspended matter and shall contain active ingredients so that it will test not more than 2 per cent below the O.T.I. in average percentage knock-down and at least 16 per cent above the O.T.I. in average percentage kill.

Initial boiling point shall not

be below 350° F. and end point not above 530° F. Flash point shall be not less than 125° F. (closed cup). No residual odor shall be present, under a specified test. The product shall meet specified test for staining properties and corrosion.

Liquid Insecticide (Household) (O-I-546a)

The specification follows closely along the lines of the specification for O-I-541a, with an addition requirement as follows, covering minimum pyrethrin content: "There shall be not less than 0.13 gram of Pyrethrin I with the normally accompanying amount of Pyrethrin II in 100 ml. of the liquid insecticide. Any additional ingredients which, when incorporated in the product, will comply with the requirements of this specification may be used to bring the strength of the product up to the performance requirements." The performance test specifies that it must test not more than 2% below the O.T.I. in knock-down and at least equal to the O.T.I. in kill.

Federal Specification For Dichlorodiphenyltrichloro- ethane (DDT) (O-D-370)

Types and Grades

DDT covered by this specification shall be of but one type and of the following grades, as specified in the invitation for bids:

Grade A.—Aerosol.

Grade B.—Technical.

Each grade shall comprise 2,2-bis (p-chlorophenyl)-1, 1,1-trichloroethane, free from added modifying agents, and shall comply with the detail requirements for the applicable grade.

Chemical and physical properties.—The chemical and physical properties shall conform to the requirements in table I.

Grade A, aerosol.—Grade A material shall be a fine white crystalline powder, free flowing and without lumps.

Grade B, technical.—Grade B material shall be a fine-to-medium granular powder with a white-to-cream color.

Setting point.—Transfer 30 ± 0.1 grams of sample into a heavy-wall, rimless, ignition tube of heat-resistant glass, 25 millimeters in inside diameter by 200 millimeters long (Corning No. 9860 or equivalent). The tube and its contents shall be supported in an oil bath maintained at 115° to 120°C. When the DDT has almost all become molten, a glass ring stirrer and an accurate thermometer graduated in fifths of a degree (A.S.T.M. standard thermometer 70° to 160°C. or equivalent) shall be fitted into the tube through a two-hole cork stopper. While the DDT is being heated, a round, wide-mouth, 8-ounce glass sample jar (approximately 2 inches in diameter and 5 inches high) shall be clamped upright in a water bath maintained at 70° ± 2°C. The jar shall be kept approximately 80 per cent immersed throughout the entire determination and its mouth shall be fitted with a cork stopper into

TABLE I.—Chemical and Physical Properties (DDT).

Properties	Grade A, aerosol		Grade B, technical	
	Minimum	Maximum	Minimum	Maximum
Setting point, °C.....	.....	.....	89	.....
Melting point, ° C.....	103	.....	.....	.....
Organic chlorine, percent by weight..	49.5	50.5	48	51
Ash content, percent by weight.....	.....	0.05	.....	0.5
Chloral hydrate, percent by weight...	.....	0.025	.....	0.025
pH by extraction.....	5.5	7.5	5.0	8.0
Water soluble material, percent by weight .....	.....	0.05	.....	0.25
Cyclohexanone insoluble, milliliter...	.....	.....	.....	0.2
Monofluorotrichloromethane insoluble, milliliter .....	.....	0.01	.....	.....

which one hole (just large enough to admit the tube containing the molten DDT) has been bored. When the DDT has melted completely and has reached a temperature of 115° to 120°C., transfer the test tube and its contents from the oil bath to the water bath-sample jar system, fitting the length of the tube down into the jar through the one-holed cork stopper so that the bottom of the tube is approximately 15 millimeters from the bottom of the sample jar. The liquefied sample shall now be stirred continuously, using the glass ring stirrer until the point of maximum super-cooling has been reached and the temperature has begun to rise. Thereafter, the stirring shall be by means of the thermometer. All stirring shall be at the approximate rate of 100 strokes per minute (1 up and down = 1 stroke) all strokes to be 3 to 4 centimeters in length, without breaking the upper surface of the sample. The liquefied material shall be stirred while it supercools. When the temperature drops to 89°C. a small amount of the sample of DDT being tested may be added as seed crystals if none have already formed in the test tube. After the material begins to crystallize, the temperature rises. At this point the stirring shall be stopped momentarily every 15 seconds and a temperature reading taken. The highest temperature reached after the point of maximum supercooling shall be taken as the setting point. The test shall be discontinued after two successively lower readings after the point of maximum supercooling.

Melting point. — Melting point shall be determined by the capillary tube method, using a Thiele-Dennis type, or equivalent, melting tube, heated at a rate not to exceed 0.5°C. per minute. The temperature at which the sample becomes completely clear shall be the melting point.

Organically bound chlorine. — Accurately weigh 1 gram of sample of DDT, transfer to a clean, dry 250-milliliter volumetric flask and add 40 milliliters of chlorine-

and thiophene-free benzene. Shake until the DDT is dissolved and then make to volume with 99-percent isopropyl alcohol. Mix well and transfer a 25-milliliter aliquot to a clean, dry 300-milliliter flask with a standard tapered neck. Add 2.5 grams of metallic sodium cut into small pieces and swirl the flask in order to mix its contents. Connect to a water-cooled reflux condenser and boil gently at least ½ hour. Shake the flask occasionally. Decompose the excess sodium by cautiously adding 10 milliliters of 50 percent isopropyl alcohol through the condenser at a rate of one to two drops per second. Boil for an additional 10 minutes and then add 60 milliliters of distilled water. Cool to room temperature, add two to three drops of phenolphthalein solution, neutralize by adding nitric acid (1:1), and add 10 milliliters of the diluted acid in excess. Add dropwise with stirring of the solution a measured excess (25 ml. approximately) of 0.1N AgNO₃ solution. Coagulate the precipitate by heating on a steam bath for approximately ½ hour. Cool to room temperature and filter through a No. 42 Whatman filter paper and wash thoroughly with distilled water, receiving the filtrate in a 500-milliliter Erlenmeyer flask. Add 5 milliliters of ferric ammonium sulphate indicator and titrate the excess AgNO₃ with 0.1N KCNS solution. Compute the net number of milliliters of 0.1N AgNO₃ consumed by the sample. Calculate percent chlorine as follows:

$$\frac{\text{ml. 0.1N AgNO}_3 \text{ (consumed)} \times 3.547}{\text{weight of sample (grams)}} = \text{Percent chlorine}$$

Note:—A blank determination (without sample) should be made following the exact procedure given about but limiting the 0.1 AgNO₃ solution to 5 milliliters, in order to obtain a chloride correction value for all reagents used.

Ash.—Place a 5-gram sample in a weighed crucible. Burn off or vaporize the DDT under a hood with good ventilation, over a low flame or from a sand bath. When the organic material has been substantially volatilized, cool the crucible and add an excess of 10 percent sulfuric acid.

The crucible shall be heated as above to dryness and then ignited in a muffle furnace for 1 hour at a temperature of 800° ± 50°C. Transfer the crucible to a desiccator, cool and weigh.

Determination of pH. — Transfer a 20 ± 0.1 gram sample of DDT to a 500-milliliter separatory funnel and dissolve in 100 milliliters of benzene. Add 50 milliliters of freshly distilled, cooled, carbon-dioxide-free water, stopper, and shake the funnel and contents for 3 minutes. Allow the two phases to separate, and draw off the aqueous layer into a flask. Stopper this flask immediately. Repeat the aqueous extraction twice, using two successive 25-milliliter portions of freshly distilled, cooled, carbon-dioxide-free water. Determine the pH of this extract, using any suitable method. However, in the event of dispute, the results obtained with a calibrated pH electrometer shall govern. Reserve the remainder of this extract for the determination of chloral hydrate and water-soluble material.

Chloral hydrate. — Place 2 milliliters of a sodium hydroxide solution (40 g. in 100 ml. of solution) in a test tube, add 1 milliliter of colorless pyridine and 4 milliliters of the aqueous extract. Similarly treat 4 milliliters of a standard aqueous solution containing 0.05 milligram of chloral hydrate per milliliter in another tube. Shake the two tubes and heat in a boiling water bath for 1 minute. The red color in the pyridine layer of the sample under test shall not be darker than that of the standard.

Water soluble material.—Boil 50 milliliters of the aqueous extract down to a small volume, and dry the residue to constant weight at 105°C.

Cyclohexanone insoluble material.—Place 71 milliliters (67 g.) of cyclohexanone in a calibrated cone-shaped centrifuge tube described in method 300.3 of Federal Specification VV-L-791. Add 33 ±

0.1 grams of DDT, stopper, and shake until the material is dissolved as completely as possible. Centrifuge for 10 minutes at 1,500 revolutions per minute in an international size 1-5b centrifuge or equivalent, using a balanced system.

Monofluorotrichloromethane insoluble material.—Place 5.0 grams of DDT and 10.0 grams of cyclohexanone in a calibrated centrifuge tube, as above. Stopper, shake until the material is dissolved as completely as possible. Dilute to 100 milliliters with monofluorotrichloromethane. Stopper, shake and centrifuge. The solution in the tube should be clear and give not more than 0.01 milliliter of sediment.

Floor Wax; Solvent-Type, Liquid (With Resins) (P-W-134)

The liquid wax shall dry to a film that polishes easily to a hard lustrous flexible surface. It shall not be so highly colored as to stain the surface, and shall dry within 45 minutes to a semi-transparent, non-tacky film which shall show no signs of whiteness. It shall consist essentially of blended waxes with small amounts of resins in a volatile organic solvent. It shall be a heavy bodied liquid mixture of sufficient fluidity to permit freedom of application at 20° to 25° C.

Nonvolatile Matter (Total Solids).—There shall be not less than 11%, by weight, of nonvolatile matter in the liquid wax. The non-volatile material shall meet the requirements shown in the table above.

Volatile Organic Solvent (Vehicle).—Shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. (closed cup).

Glass Cleaner, Liquid (P-G-406)

Liquid glass cleaner covered by this specification is intended primarily for use on windshields, windows and other glass surfaces and is not intended for use on transparent plastics. It shall be of two types:

Requirements for Non-Volatile in P-W-134

	Minimum	Maximum
Softening Point	71° C	..
Acid Value .....	..	18
Saponification Value	40	85
Iodine Number (WIJS).....	15	22
Ash Content, Per Cent.....	..	0.5

I — regular, and II — antifogging. Raw materials shall not include dyes, waxes, perfumes, ammonia or inorganic alkalies.

During storage and handling it shall show no tendency to decompose, emulsify, or separate into layers at normal temperatures.

It shall be nonirritating to the skin and shall contain no toxic ingredients other than denaturants for alcohol.

The odor shall be no more objectionable than the comparison solution specified.

The flash point of the liquid shall be not less than 27°C. (80°F.).

The pH value of the liquid shall be not less than 7.0 nor more than 9.0 at 25°C.

The liquid shall not attack or produce more discoloration of aluminum alloys than that caused by the comparison solution.

The liquid shall not produce more softening, discoloration, or change in the surface appearance of enamel or lacquer finish than the comparison solution.

When the compound is properly applied to glass surfaces and polished, it shall leave the surface free from dust, grime, and ordinary soil material, and shall produce an appearance equal to or better than that of the comparison solution.

The residue on evaporation of 50 milliliters shall not exceed the following requirements:

	Residue in grams
Type I	0.005
Type II	0.005

The antifogging (type II) liquid shall produce antifogging characteristics on glass.

Where the comparison solution is used, it shall have the following components.

Comparison solution	Parts by volume
Ethylene glycol	3
Iso-propyl alcohol	10
Ethyl alcohol (95 per cent) ..	27
Distilled water	60

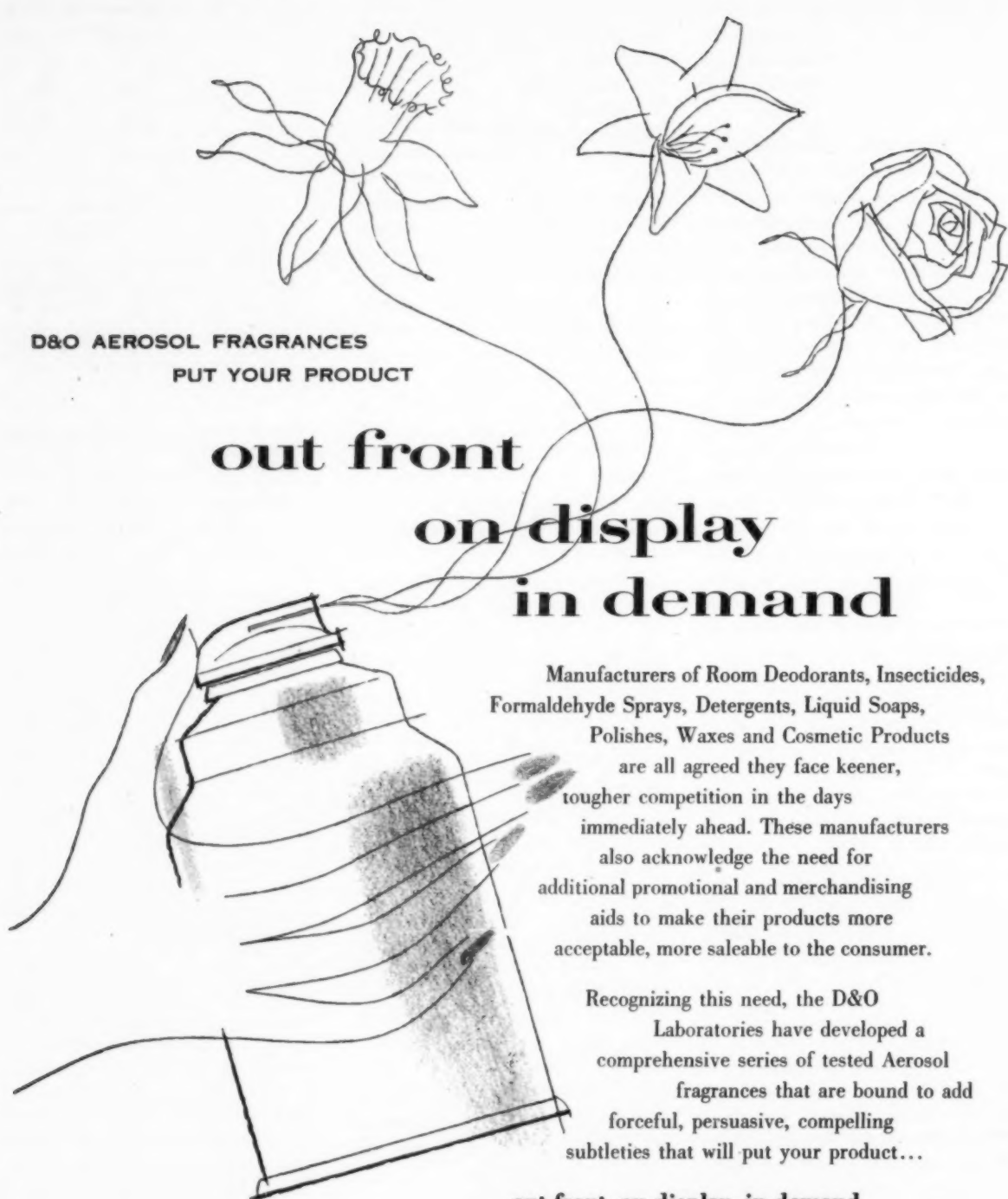
Corrosion and discoloration of aluminum alloys.—Polish half of the area of one side of two 3- x 6-inch panels of aluminum alloy conforming to Federal Specification. Place several drops of the solution under test on the polished surface of one of the panels and cover with a watch glass. Treat the other panel in a similar manner using the comparison solution specified herein. At the end of 6 hours, remove the watch glasses, rinse the panels with water, and dry with compressed air. The panels shall then be observed for any evidence of attack or discoloration in excess of that caused by the comparison solution.

Softening and discoloration of protective films.—Four clean aluminum alloy panels conforming to Federal Specification shall be finished as shown in table I. The coat of zinc chromate primer shall be air-dried for 2 hours and then baked for 2 hours at 250°F. before application

(Turn to Page 276)

Table I.—Preparation of panels for test on protective films

Panel	1st Coat	Finish
1A	Zinc chromate primer	One coat enamel
1B	Zinc chromate primer	One coat enamel
2A	Zinc chromate primer	Two coats lacquer
2B	Zinc chromate primer	Two coats lacquer



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Several Important Essential Oils

BOOK OF SPECIFICATIONS & STANDARDS NOTES

Descriptive Characteristics: The statements concerning descriptive characteristics given in the individual monographs are not intended as standards or tests for purity.

Specific Gravity: Unless otherwise specified the figure $\frac{15^{\circ} \text{ C.}}{15^{\circ} \text{ C.}}$ is used as the

basis for the specifications and standards that follow. A correction factor of .0007 must therefore be applied for each degree.

Optical Rotation: The figures given in the monographs are at room temperature approximately 20° C.

Refractive Index: The figures given are at room temperature approximately 20° C. unless otherwise specified.

Solubility: The figure given in the monographs are at 25° C. unless otherwise specified.

Mineral Oil: The mineral oil used in the solubility definition has a viscosity at 100° C. of

65
—
75

Solvents: The solubility in fixed and volatile oils, and in such solvents as mineral oil, benzyl benzoate, glycerine and propylene glycol appearing in the monographs are listed, for the sake of uniformity, in alphabetical order.

GENERAL TESTS:

A—Determination of Esters

Place the quantity of sample mentioned in each separate monograph, in a tared, 125-cc, Erlenmeyer flask, and weigh it accurately. Add 25-cc of half-normal alcoholic potassium hydroxide, connect the flask with a reflux condenser, and boil the mixture on a water bath for exactly one (1) hour, unless otherwise specified. Allow the mixture to cool, and titrate the excess of alkali with half normal sulfuric acid, using 10 drops of phenolphthalein T.S. as the indicator. Calculate as prescribed in each individual monograph.

B—Determination of Total Alcohols

Place 10-cc of the sample in an acetylation flask of 100-cc capacity and add 10-cc of acetic anhydride and 1 Gm. of anhydrous sodium acetate. Boil the mixture gently for exactly one (1) hour,

cool, disconnect the flask from the condenser, transfer the mixture to a small separator, rinsing the acetylation flask with three successive, 5-cc portions of warm distilled water, and add the rinsings to the separator. When the liquids have completely separated, reject the aqueous layer, and wash the remaining oil with successive portions of sodium carbonate T.S., diluted with an equal volume of distilled water, until the last washing is alkaline to two (2) drops of phenolphthalein T.S.

Dry the resulting oil with anhydrous sodium sulfate and filter. Transfer the quantity of the dry acetylated oil mentioned in each separate monograph, to a tared, 100-cc, Erlenmeyer flask, note its exact weight, add 25-cc of half-normal alcoholic potassium hydroxide, connect the flask with a reflux condenser, and boil the mixture on a water bath for exactly one (1) hour.

Allow the mixture to cool, and titrate the excess of alkali with half-normal sulfuric acid using 10 drops of phenolphthalein T.S. as the indicator. Calculate the per cent of the total alcohols as outlined in each individual monograph.

C—Determination of Linalool

Dimethyl Aniline—Acetyl Chloride Method

10-cc of linalool or essential oil containing linalool, previously dried with sodium sulfate, is introduced into a 125-cc g.s. Erlenmeyer flask cooled with ice and water. To the cooled oil is added 20-cc dimethyl aniline (mono-methyl free) and the contents thoroughly mixed, then 8-cc acetyl chloride (reagent grade) and 5-cc of acetic anhydride are added, the anhydride serving as a solvent to prevent crystallization of the reaction mass. The mixture is cooled for a few minutes and permitted to stand at room temperature for ¼ hour after which time the flask is immersed in a water bath maintained at 40° C. ± 1° for three hours. At the end of this time the acetylated oil is washed three times with 75-cc of ice water, then with successive washes of 25-cc of 5% sulfuric acid until the separated acid layer fails to liberate any dimethyl aniline with an excess of caustic. After removal of the dimethyl aniline, the acetylated oil is washed with 10-cc of 10% sodium carbonate and washed neutral with water.

The oil is separated, dried over anhy-

drous sodium sulfate and the ester value determined in the usual manner. The linalool content can thus be obtained directly from saponification tables or by substitution in the following formula:

$$\% \text{ Linalool} = \frac{\text{cc N/2 KOH} \times 154.14}{20 (\text{wt. sample} - \text{cc N/2 KOH} \times 0.021)}$$

As this test is further to be used for other oils containing linalool, besides linalool itself, a correction factor is necessary with oils containing significant amount of esters. For such oils, the following standard formula is recommended:

$$\% \text{ Total Linalool} = \frac{A \times 77.07 \times (1 - (E \times .0021))}{B - (A \times 0.021)}$$

where A = cc half-normal alkali required for saponification.

where B = weight of sample.

where E = per cent of esters calculated as linalyl acetate in the original oil.

The test is not applicable to all tertiary alcohols, but only to linalool and linalool containing oils.

D—Hydroxylamine Method for Aldehydes and Ketones

Preparation of Hydroxylamine solution: Triturate 0.1 Gm. of bromophenol blue with 3-cc of twentieth-normal sodium hydroxide. When solution is complete, dilute to 25-cc with distilled water. Dissolve 20 Gm. of hydroxylamine hydrochloride in 40-cc of distilled water, dilute to 400-cc with alcohol, add with stirring 300-cc of half-normal alcoholic potassium hydroxide and 2.5-cc of the bromophenol blue solution, and filter the mixture.

ASSAY METHOD: Add 75-cc of Hydroxylamine solution prepared as above to W gm. (see Note 1.) (accurately weighed of substance to be tested) and mix thoroughly.

For Aldehydes: Allow to stand at room temperature for 15 minutes.

For Ketones: Reflux gently for one hour using a water condenser or an air condenser at least 30 inches long. Cool to room temperature. (See Note 2.)

Titrate to the greenish-yellow end point of Bromophenol Blue using one-half normal hydrochloric acid. Perform a blank determination using 75-cc of the hydroxylamine solution. Subtract the num-

ber of cc of half-normal hydrochloric acid used in the titration of the sample from the number of cc used in the blank.

$$\% \text{ Aldehyde or Ketone} = \frac{N \times .05 M}{W}$$

where N is difference in cc of 0.5 N HCL between blank and sample obtained above.

M is molecular weight of aldehyde or ketone in terms of which results are to be calculated.

W is weight of sample used.

Note 1: The weight of sample W should be such that the cc of Hydrochloric Acid required for the titration of the flask containing the sample is slightly more than half the cc required to titrate the blank. This weight W will be given under each individual monograph, based on the use of relatively fresh hydroxylamine solution which will give a blank titration of over 30-cc of one-half normal Hydrochloric Acid. The solution has a tendency to lose strength on standing more than about 10 days.

Note 2: Some aldehydes or ketones have been found to require longer standing or heating. In such cases the change will be noted under the individual monograph.

Note 3: The value of the factor .05 M in the above formula for calculation of percentage is given under the individual monographs.

E—Determination of Acid Value

Dissolve approximately 10 gms. of the sample, accurately weighed, in 50 cc. of alcohol (previously neutralized to phenolphthalein with N/10 sodium hydroxide). Add 1 cc. of a 1% alcoholic phenolphthalein solution and titrate with N/10 sodium hydroxide until the solution remains faintly pink after 30 seconds of shaking. The cc of N/10 alkali required to neutralize the sample multiplied by 5.6 and divided by the weight of sample expressed in grams, indicates the Acid Value of the sample taken.

F—Determination of Evaporation Residue

Place the quantity of sample specified in the individual monograph in a tarred 100 cc. glass evaporating dish, previously heated on a steam bath and cooled to room temperature in a desiccator and weigh it accurately. Heat the evaporating dish containing the oil on a steam bath for the length of time specified in the individual monograph. Allow the dish and contents to cool to room temperature in a desiccator and weigh accurately. Determine the weight of the residue and express as a percentage of the oil originally taken.

G—Determination of Chlorinated Compounds

At the end of a copper wire bend a strip of 20 mesh copper gauze 1.5 cm. wide and 5 cm. long. Place the strip in the non-luminous flame of the Bunsen Burner un-

til it glows without imparting a green color. Cool the gauze and repeatedly ignite it until an oxide coating has formed. To apply the test, cool the gauze and add 2 drops of the sample by means of a medicine dropper, permitting it to burn in the air. Again cool and add 2 more drops of the test material and burn as before. Continue the procedure until six drops have been ignited. When completed, if the gauze is held in the outer edge of the burner to a height of about 4 cm., the flame should be free of even a transient green color.

H—Determination of: Congealing Point

A Pyrex test tube approximately 18-20 mm. internal diameter is filled $\frac{1}{2}$ full with the liquid or melted solid under test. The tube and its contents are immersed in a suitable bath until the temperature of the sample is super-cooled to approximately 5°C. below the expected congealing point. The tube and its contents are then suspended inside of a test tube 25-30 mm. internal diameter which has been fitted with a cork ring or washer to receive the smaller tube. The jacketed tube is placed in a bath maintained at 5°C. below the congealing point. The proper range MCA thermometer is inserted in the liquid and the liquid stirred to produce solidification. If needed, solidification can be induced by seeding. The stirring is continued until the determination has been completed. The temperature of the test material should be observed constantly. The maximum constant temperature obtained is the congealing point.

I—Determination of: Aldehydes (Hydroxylamine Hydrochloride Method)

BROM PHENOL BLUE INDICATOR solution:—Triturate 0.1 gm. of brom-phenol blue with 3 ml. of N/20 sodium hydroxide. When solution is complete, dilute to 25 ml. with distilled water.

Preparation of Hydroxylamine Hydrochloride solution:—Dissolve 150 gms. of hydroxylamine hydrochloride (C.P. or freshly recrystallized) in 270 ml. of distilled water and dilute to 3 liters with aldehyde-free ethyl alcohol. To this solution add 15 ml. of the above brom-phenol blue solution. The hydroxylamine hydrochloride solution is then adjusted to a pH of 3.4 (light green color), (Note 1) with N/2 alcoholic potassium hydroxide.

ASSAY METHOD:—To 30 ml. of hydroxylamine hydrochloride solution contained in a corked 150 ml. Erlenmeyer flask, add an accurately weighed sample of the material to be tested. The solution is thoroughly mixed and allowed to stand at room temperature for 10 min. The liberated hydrochloric acid is titrated with N/2 alcoholic potassium hydroxide to a pH of 3.4 or a light green color, using a 30 ml. portion of the original reagent as a color standard. Note 2.

of ml. of N/2 potassium hydroxide used in the titration and M is the molecular weight of the aldehyde in terms of which the results are to be calculated. W is the weight in grams of the sample used.

Note 1: Reagent must be viewed in small portions (30 ml.) as large volumes seem to have a reddish color.

Note 2: When viewing the end point the precipitated salts should be allowed to settle.

J—Determination of: Aldehydes and Ketones (Neutral Sulphite Method)

Place 10-cc of the oil to be tested, measured from a pipette in a 100-cc cassia flask, and add 50-cc of a freshly prepared aqueous solution of sodium sulphite, 30 per cent by weight volume. Add a few drops of a one per cent solution of phenolphthalein and neutralize with a 50 per cent (by-volume) aqueous acetic acid solution. Heat the mixture in a bath containing boiling water, and shake the flask repeatedly neutralizing the mixture from time to time by the addition of a few drops of the 50 per cent acetic acid solution, using a stoppered flask to prevent loss of volatile material. When no coloration appears upon the addition of a few more drops of phenolphthalein solution and heating for 15 minutes, cool to room temperature, and when the liquids have separated completely, add sufficient of the sodium sulphite solution to raise the lower limit of the oily layer within the graduated portion of the neck. The number of cc of separated oil in the graduated neck is multiplied by ten and subtracted from 100, the resulting figure represents the per cent by volume of the aldehyde or ketone in the sample being examined.

K—Determination of: Phenols

Introduce 10-cc of oil into a 100-cc cassia flask. Add 75-cc of 1.0 Normal potassium hydroxide and shake vigorously for 5 minutes to insure thorough extraction of the phenol by the alkali solution. Allow to stand for about one half hour, then add sufficient potassium hydroxide solution to raise the oily layer within the graduated portion of the flask. Allow the stoppered flask to stand several hours or preferably over night. The volume of insoluble oil in cubic centimeters is subtracted from 10. This difference multiplied by 10 gives the percentage of phenol by volume in the oil.

L—Determination of: Heavy Metals

Place in a test tube 10-cc of the oil and add an equal volume of distilled water to which 1 drop of concentrated hydrochloric acid has been added. Shake thoroughly and then pass hydrogen sulfide through the mixture until it is saturated. Carry out simultaneously a blank determination to which no hydrogen sulfide is added. In the absence of heavy metals, no darkening in

$$\% \text{ Aldehyde} = \frac{N \times 0.005 M}{W} \quad \text{where N is the number}$$

color in either the oil or the water layer is produced. A comparison of the colors of the blank and of the determination will aid in establishing the absence of heavy metals, or the presence of traces. The formation of a scum at the surface between the oil and the water layers is no indication of the presence of heavy metals, unless the scum is dark in color.

General Tests—Reagents

I—Purification of Alcohol

Add to each liter of alcohol to be purified about 5 gm. of aluminum shavings and 8 to 10 gm. of potassium hydroxide; reflux on a steam bath for about 3 hours.

Then distill off the alcohol to dryness on the steam bath, discarding the first 10 ml. that comes over. This alcohol is used in the preparation of hydroxylamine hydrochloride and alcoholic caustic solutions.

Specifications and Standards For

ETHYL PHENYL ACETATE

$C_{10}H_{12}O_2$ Mol. Wt. 164.20

The ethyl ester of phenylacetic acid has not been found to occur naturally in volatile oils. The free acid and other esters of phenylacetic acid have been found in a limited number of essential oils.

As a general rule, the simple esters of phenylacetic acid have pronounced honey-like odors and are used for both flavor and odor effects. The free acid and lower esters are also used extensively for syntheses in the pharmaceutical industry.

Preparation

By ethanolic esterification of the corresponding acid or nitrile.

Physical & Chemical Constants

Color, Appearance and Odor: Colorless or nearly colorless liquid having a pleasant, strong sweet odor suggestive of honey.

Specific Gravity at 25°/25°C.: 1.027—1.032.

Refractive Index at 20°C.: 1.4960—1.5000.

Halogens: Negative. Proceed as directed for the determination of chlorinated compounds. (See G)

Acid Value: Maximum 1.

Proceed as directed for the determination of acid value. (See E)

Purity: Minimum 98% as $C_{10}H_{12}O_2$.

Proceed as directed for the determination of esters using approximately 1.0 gm. sample accurately weighed. (See A)

The number of cc. of half-normal potassium hydroxide solution consumed in the saponification, multiplied by 0.08210, indicates the number of grams of ester calculated as Ethyl Phenyl Acetate in the sample taken for assay.

Solubility in Alcohol: Soluble in 3 parts of 70% alcohol.

Descriptive Characteristics

Solubility:

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Insoluble.

Fixed Oils: Soluble in all proportions in most fixed and volatile oils.

Alcohol: Soluble in all proportions.

Propylene Glycol: Insoluble.

Water: Insoluble.

Glycerine: Insoluble.

Stability:

Alkali: Unstable in the presence of strong alkalis.

Acid: Moderately stable to organic acids and dilute mineral acids.

Containers

Can be shipped in glass, aluminum, tin-lined or steel containers. Good quality galvanized or suitable lacquer lined drums are also satisfactory provided long storage is not contemplated.

Storage

Store preferably in a cool dry place protected from light.

Specifications and Standards For

ANISIC ALDEHYDE

$C_8H_8O_2$ Mol. Wt. 136.14

p-methoxy benzaldehyde, anisaldehyde, aubepine.

Anisic Aldehyde is found in acacia flowers, Tahiti vanilla extract and in minute amounts in other oils. Anisic Aldehyde is used in general perfume work and especially in the scenting of soaps.

Preparation

By methylation and oxidation of para cresol and also by oxidation of anethole.

Physical & Chemical Constants

Color and Appearance: Colorless to slightly yellow liquid with characteristic hawthorn odor.

Specific Gravity at 25°/25°C.: 1.199—1.122.

Refractive Index at 20°C.: 1.5710—1.5730.

Chlorine: Negative. Proceed as directed for the determination of Chlorinated Compounds. (See G)

Acid Value: Maximum 6.

Method: Proceed as directed for the determination of acid value. (See E)

Purity: Not less than 97.5% by hydroxylamine method and not less than 99% by bisulfite method.

Assays: Aldehyde determinations:

(1) Proceed as directed for the hydroxylamine method for Aldehydes (see D) using approximately 1.2 gms. of sample, accurately weighed. Allow sample and blank to stand at room temperature for 15 minutes.

The difference in the cc. of N/2 HCl required for both titrations multiplied by 0.06807, indicates the weight in grams of anisic aldehyde in the sample taken for assay.

(2) Place 40 cc. of 30% sodium bisulfite solution in a 200 cc. cassia flask and add to this approximately 100 cc. of boiling water. Immediately pipette 10 cc. of the sample into the flask, stopper securely and shake vigorously for 1½ minutes.

Then add sufficient boiling water to fill the flask to the top of the graduations in the neck of the flask. Allow to cool and read off the oil volume in the neck of the flask. Ten times this volume in cc's subtracted from 100 gives the per cent anisic aldehyde present in the sample.

Solubility in Alcohol: Soluble in 7 vol. of 50% Alcohol.

Descriptive Characteristics

Solubility:

Alcohol: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerine: Practically insoluble.

Mineral Oil: Practically insoluble.

Propylene Glycol: Moderately soluble.

Stability: Fairly stable to acids and mild alkalis.

Containers

Should be shipped preferably in glass or tin-lined containers.

Storage

Store in a cool place, protected from light in tight, full containers to minimize oxidation.

Specifications and Standards For

OIL LEMONGRASS

There are basically two types of Lemongrass Oil commercially available: the East Indian and "West Indian" type oil.

The East Indian Oil is also known as Cochin, Native and British Indian Lemongrass Oil.

The "West Indian" type oil appears on the market designated according to geographic origin as Madagascar, Guatemala, Honduras or Florida Lemongrass Oil, etc.

Botanical Nomenclature:

East Indian Oil: *Cymbopogon flexuosus* (Stapf). *Andropogon nardus* var. *flexuosus* (Hack.).

"West Indian" type Oil: *Cymbopogon citratus* (Stapf). *Andropogon nardus* var. *ceriferus* (Hack.).

Preparation:

By steam distillation of the freshly cut and partially dried grasses.

Physical & Chemical Constants:

East Indian Oil:

Color and Appearance: The East Indian Oil is generally dark yellow to light brown-red in color and has a pronounced heavy lemon-like odor.

Specific Gravity 15°/15° C. 0.900-0.910.

Optical Rotation —3° to +1°.

Refractive Index @ 20° C. 1.4830-1.4890.

Citral Content:

A. Acid Sulfite Method—Not less than 75%.

Solubility—Solubility in 2 to 3 volumes of 70% alcohol, often with slight turbidity.

"West Indian" Type Oil:

Color and Appearance: The "West Indian" type Oil varies from light yellow

to light brown or orange. Its odor is lemon-like but of lighter character than the East Indian.

Specific Gravity 15°/15° C. 0.875-0.900.

Optical Rotation -3° to +1°.

Refractive Index @ 20° C. 1.4830-1.4890.

Citral Content:

A. Acid Method—Not less than 75%.

Solubility—Yields cloudy solutions in 70, 80, 90 and 95% alcohol.

Assay

A. Acid Sulfite Method: Introduce 10cc of Lemongrass Oil into a 100cc. Cassia flask and add 75cc. of a 30% solution of sodium metabisulfite. Heat the mixture in a water bath to 85° and shake the flask intermittently for one-half to one hour. Then add sufficient bisulfite solution to raise the meniscus within the graduated portion of the flask. On cooling, the volume of insoluble oil expressed in per cent subtracted from 100 represents the citral content.

Descriptive Characteristics

Stability:

Alkali: Lemongrass oils slowly decompose in the presence of alkalis.

Acids: Strong inorganic acids tend to polymerize the oil. Weak organic acids have less effect.

Solubility:

Propylene Glycol: The East Indian oil is soluble in all proportions of propylene glycol with slight turbidity or cloudiness.

The "West Indian" type oil has limited solubility in propylene glycol (about 10% accompanied by cloudiness).

Mineral Oil: Soluble with cloudiness or turbidity.

Fixed Oils: Soluble in most fixed oils.

Benzyl Benzoate: Soluble in all proportions, generally with slight turbidity.

Diethyl Phthalate: Soluble in all proportions with slight turbidity.

Glycerin: Slightly soluble.

Containers

Should be shipped preferably in glass, aluminum or tin-lined containers. Good quality galvanized containers are suitable, provided long storage is not contemplated.

Storage

Store in full containers and avoid exposure to light and excessive heat.

Specifications and Standards for

VETIVER OIL General Names

The oil of commerce is characterized by its geographical origin.

Vetiver Oil Java—Vetiver Oil Reunion (Bourbon)—Vetiver Oil Haiti.

Botanical Nomenclature

Vetiveria Zizanioides Stapf.

Andropogon Muricatus Retz.

Preparation

By steam distillation of partially dried roots.

Physical and Chemical Constants

Odor: Aromatic—somewhat woody.

Color and Appearance: Brownish to a reddish-brown viscous liquid.

Specific Gravity @ 15° C: 0.990 to 1.040.

Optical Rotation: +15° to +45°.

Refractive Index @ 20° C: 1.5200 to 1.5280.

Solubility:

Soluble in 1 to 3 vols. of 80% alcohol, sometimes opalescent or slightly turbid upon further dilution.

Descriptive Characteristics

Stability:

Acids: Fairly stable to dilute acids but unstable in the presence of strong acids.

Alkali: Fairly stable to weak alkali. Unstable to strong alkali.

Solubility:

Fixed Oils: Soluble in all proportions in most fixed oils.

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble with slight cloudiness.

Glycerin: Insoluble.

Propylene Glycol: Practically insoluble.

Saponification Value:

See Directions (see G.T.A.) using 5 grams of oil, accurately weighed. The number of cc of N/2 alkali consumed in the saponification multiplied by 28.05 and divided by the weight of sample taken equals Saponification Value.

Ester Value After Acetylation:

119 to 165.

See Directions (see G.T.A.) using 2 grams of acetylated oil accurately weighed for saponification. The number of cc of N/2 alkali consumed in the saponification multiplied by 28.05 and divided by the weight of sample taken equals Ester Value after Acetylation.

Containers

Should be shipped preferably in glass or tin-lined containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place, protected from light.

Specifications and Standards for

OIL OF PATCHOULY Botanical Nomenclature

Pogostemon Patchouly, Pellet.

Preparation

Direct steam distillation of the dried leaves.

Physical and Chemical Constants

Color and Appearance—a yellow-greenish brown, or brown liquid.

Specific gravity @ 15° C: .950 to .995.

Optical Rotation: -48° to -68°.

Refractive Index @ 20° C: 1.5070 to 1.5200.

Solubility—Soluble in 10 vol. of 90% alcohol, usually with opalescence.

Acid Value—not more than 5.

Proceed as directed for the determination of acid value.

(See Determination G.T.E.)

Saponification No.—Not more than 18.

Proceed as directed for the determination of esters. (See Determination G.T.A.) using 5 grams of the oil accurately weighed.

Descriptive Characteristics

Stability:

Stable to weak alkalis and acids.

Solubility:

Benzyl Benzoate: Soluble.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerin: Practically insoluble.

Mineral Oil: Soluble with haziness.

Propylene Glycol: Partially soluble.

Containers

Should be shipped preferably in glass or tin-lined containers. Good quality galvanized containers are suitable provided long storage is not contemplated.

Storage

Store in tight, full containers in a cool place, protected from light.

Specifications and Standards for

PHENYL ETHYL ALCOHOL C₈H₁₀O Mol. Wt. 122.16

Preparation

Phenyl Ethyl Alcohol can be prepared from Benzene, Ethylene Oxide, Aluminum Chloride and Hydrochloric Acid; also, from Phenyl Magnesium Bromide and Ethylene Chlorohydrin or from Chlorobenzene, Magnesium and Ethylene Chlorohydrin or Ethylene Oxide.

Physical and Chemical Constants

Color, Appearance and Odor—Colorless, viscous liquid with a rose odor.

Specific Gravity @ 25° C. 1.017 to 1.020.

Refractive Index @ 20° C. 1.5310 to 1.5330.

Halogens—Negative. Proceed as directed for the determination of Chlorinated Compounds (See Determinations G.T.G.).

Water Solubility—2.0 cc. should be clearly soluble in 100 cc. of distilled water at 25° C. after thorough shaking.

Descriptive Characteristics

A satisfactory quality of Phenyl Ethyl Alcohol should not reveal any chemical off-odor when two cc. are stirred up in 20 cc. of ice cold odorless water.

Solubility:

Benzyl Benzoate: Very soluble.

Diethyl Phthalate: Very soluble.

Fixed Oils: Very soluble.

Alcohol: Very soluble.

Mineral Oil: Slightly soluble.

Propylene Glycol: Very soluble.

Glycerin: Very soluble.

Water: Sparingly soluble.

Stability:

Acids and Alkalis: Very stable in closed containers. Quite stable with mild alkali or acid at ordinary temperatures and conditions as encountered in the preparation and storage of cosmetics and soaps.

Containers

Should be shipped in tin-lined or galvanized drums or in glass.

Storage

Should be stored in tight containers reasonably well protected against direct light.

Specifications and Standards for TERPINYL ACETATE

$C_{18}H_{22}O_2$ Mol. Wt.: 196.28

Preparation

Acetylation of terpineol.

Physical & Chemical Constants

Color and appearance: Colorless liquid having an odor suggestive of bergamot and lavender.

Specific gravity at 15° C.: 0.958 to 0.968.

Optical rotation: between $-0^{\circ}30'$ and $+0^{\circ}30'$.

Refractive index @ 20° C.: 1.4640 to 1.4660.

Ester Content: 97-100% (calculated as terpinyl acetate).

Method: Proceed as directed for the determination of esters, (see A), using approximately 1.0 g of sample accurately weighed. Reflux the mixture on a water bath for exactly two hours. The number of cc. of half normal potassium hydroxide consumed in the saponification, multiplied by 0.0981 indicates the number of grams of ester calculated as Terpinyl Acetate in the sample taken for assay.

Solubility in alcohol: Soluble in 5 or more volumes of 70% alcohol.

Descriptive Characteristics

Solubility:

Fixed Oils: soluble in all proportions.
Diethyl Phthalate: soluble in all proportions.

Benzyl Benzoate: soluble in all proportions.

Mineral Oil: soluble in all proportions.

Water: slightly soluble, approx. 0.1%.

Glycerin: slightly soluble, approx. 0.1%.

Stability:

Acids: Not very stable; strong acids transform terpinyl acetate into terpenic products.

Alkali: Stable in neutral and weak alkaline media; strong alkalis saponify the ester.

Oxidation: Stable.

Containers

Terpinyl acetate should be shipped in glass, tin, aluminum, galvanized iron.

Specifications and Standards for TERPINEOL

$C_{10}H_{18}O$ Mol. Wt.: 154.24

Formula: Mixture of Isomers

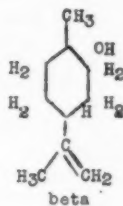
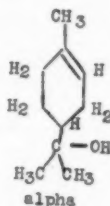
Preparation

Obtained from terpin hydrate by splitting off the elements of water by chemical means.

Physical & Chemical Constants

Color and appearance: Colorless liquid, viscous at room temperature, having an odor of the lilac type.

Specific gravity @ 15° C: 0.936 to 0.941.

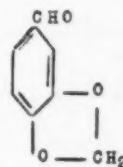
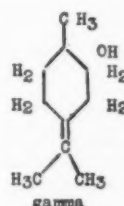


sembling heliotrope, free of safrol by odors.

Congealing Point 35° C. minimum.

Melting Point: 35.5°-37° C.

Aldehyde content: 99.0% minimum calculated as Heliotropine.



Optical rotation: between $-0^{\circ}10'$ and $+0^{\circ}10'$.

Congealing temperature: all products should crystallize when seeded at $+2^{\circ}$ C.

Boiling range: 214°-224° C.; 90% within 5° C.

Refractive index @ 20° C.: 1.4825-1.4850.

Solubility in alcohol: soluble in 2 and more volumes of 70% alcohol; 4 and more volumes of 60% alcohol, 8 and more volumes of 50% alcohol.

Descriptive Characteristics

Solubility:

Diethyl Phthalate: soluble in all proportions.

Benzyl Benzoate: soluble in all proportions.

Mineral Oil: soluble in all proportions.

Water: slightly soluble; approx. 0.5%.

Water in Terpineol: slightly soluble; approx. 5%.

Glycerin: slightly soluble; approx. 0.5%.

Stability:

Acids: not stable; terpineol transformed into terpenic products.

Alkali: stable in neutral and moderately alkaline media.

Oxidation: relatively stable.

Containers

Terpineol should preferably be shipped in glass, tin, aluminum, galvanized iron, clean black iron.

Specifications and Standards for HELIOTROPINE

$C_{15}H_{20}O_2$ Mol. Wt.: 150.13

Heliotropine, piperonal, piperonyl aldehyde, protocatechuic aldehyde methylene ether, 3-4 methylene dioxybenzaldehyde.

Grades: Perfumery grade.

Preparation

Oxidation of isosafrol.

Uses: Heliotropine is widely used in soap perfumery. Aids in the making of carnation, violet, lilac, sweet pea and muguet types. An indispensable base for all heliotrope perfumes and bouquets.

Physical & Chemical Constants

Color and appearance: Fine, white, lustrous crystals.

Odor: A sweet, fine, flowery note re-

Assay

Heliotropine Determinations

Proceed as directed in D, using approximately 1.5 gram sample, accurately weighed. Reflux gently for one-half hour. The difference in the cc. of N/2 HCl required for both titrations multiplied by 0.0751 indicates the weight in grams of Heliotropine taken for assay.

Descriptive Characteristics

Stability

When stored at temperatures approximating its melting point, the product tends to fuse and discolor.

Acids: Stable to dilute acids at ordinary temperatures.

Alkali: Stable to dilute alkali at ordinary temperatures.

Oxidation: Relatively resistant to oxidations; oxidizes very slowly to piperonylic acid.

Solubility

Alcohol: soluble in 3 to 4 cc. of 70% alcohol.

Benzyl Benzoate: V.S.

Diethyl Phthalate: V.S.

Fixed Oils: F.S. in most fixed oils.

Glycerin: Insol. (less than 1 part per 100).

Mineral Oil (Carnation white): Sp. Sol.

Propylene Glycol: F.S.

Volatile Oils: F.S. to S. in most volatile oils.

Water: Insol. (less than 1 part per 100).

The figures given are at 25° C. unless otherwise noted. Relative cc. of solvent for 1 gram of Heliotropine.

Very soluble (V.S.): less than 1 cc. of solvent.

Free soluble (F.S.): from 1 to 10 parts of solvent.

Soluble (S): from 10 to 30 parts of solvent.

Sparingly soluble (Sp. Sol.) from 30 to 100 parts of solvent.

Containers

1 oz. to 200 lbs., usually packed in fibre-board or pressboard containers and wooden barrels.

Storage

Preserve Heliotropine in a cool, dry place protected from light.

Specifications and Standards for Copaiba Oil

Other General Names

Copaiva oil.
Copaiva Balsam oil.

Preparation

Obtained by distillation of Copaiba Balsam.

Physical and Chemical Constants

The oil is colorless, yellowish liquid having the characteristic odor of Balsam Copaiba and an aromatic, slightly bitter and pungent taste.

Specific Gravity @ 15° C.: 0.886 to 0.912.

Optical Rotation: -2° to -33°.

Refractive Index @ 20° C.: 1.4930 to 1.5000.

Gurjun Oil Test:

Add 5 to 6 drops of sample to 10 cc glacial acetic acid containing 5 drops of nitric acid. When gurjun oil is present a purple violet color develops within two (2) minutes.

Descriptive Characteristics

Stability:

Alkali: Fairly stable.

Acid: Fairly stable.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Propylene Glycol: Practically insoluble.

Glycerine: Insoluble.

Alcohol: Usually soluble in an equal volume of absolute alcohol, but requires from 5 to 10 volumes of 95% alcohol for complete solution.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for Oil Citronella Ceylon

Botanical Nomenclature

Andropogon Nardus Ceylon, de Jong.
Cymbopogon Nardus Rendle, lina batu.
Family: Gramineae.

Preparation

Direct steam distillation of the dried grass.

Physical and Chemical Constants

Color and appearance—Yellow to yellowish brown liquid.

Specific Gravity @ 15° C.: -0.898 to 0.910.

Optical Rotation: -9° to -18°.

Refractive Index @ 20° C.: -1.4790 to 1.4850.

Solubility in Alcohol—Clearly soluble at some dilution between 1 and 2 volumes of 80% alcohol. When diluted to 10 volumes, the solution should remain clear or become not more than slightly opalescent with no separation of oil after standing overnight.

Mineral Oil (saturated hydrocarbons) —Negative.

Place 20 cc of fuming sulphuric acid, containing 15% free SO₃ in a graduated, narrow neck Babcock bottle, 50 cc capacity, cool in ice bath 10 minutes, keep bottle in ice bath and add 5 cc of Oil Citronella Ceylon dropwise at such a rate that the bottle remains cold. Incline the bottle and rotate continuously during the addition, which should require about 5 minutes. When no further reaction is apparent remove from ice bath, bringing slowly to room temperature with frequent cautious shaking. Wash down neck with 3 or 4 cc of fuming sulphuric acid.

When no further reaction is apparent on shaking, shake vigorously for 30 seconds. Place bottle in water bath and heat slowly to 60° C. with frequent agitation. (Caution is required, as escaping gas may force some solution from bottle.) Heat at 60°-65° C. for 15 minutes, shaking the contents carefully but vigorously 8-10 times during this period. Remove from bath and without cooling, carefully add sulphuric acid (Specific gravity about 1.84) until the bottle is about three-fourths full. Shake well. No material should adhere to stem and sides at this point; cool to room temperature, add sulphuric acid (Specific gravity about 1.84) until the level is about two-thirds up in neck of flask. Centrifuge 10 minutes at 1,200 revolutions per minute or stand over night and read, centrifuge an additional 10 minutes. Pure Oil Citronella Ceylon should have no readable separation.

Aldehyde Content

7% to 15% calculated as Citronellal.

Proceed as directed in the hydroxylamine method for aldehydes (see Determinations (G.T.D.), using approximately 5 grams of the oil, accurately weighed. The difference in the cc of N/2 HCL required for both titrations, multiplied by 0.07712, indicates the weight in grams of Citronellal in the sample taken for assay.

Total Alcohols

55% to 65% (calculated as Geraniol).

Proceed as directed for the determination of total alcohols (see Determinations G.T.B.). Observe the following modifications: 1. Use two (2) grams of anhydrous sodium acetate; 2. Immerse the acetylation flask in an oil bath to the level of the liquid in the flask; continue the acetylation for two (2) hours, keeping the bath between 155°-160° C.

Use approximately two (2) grams of

the dried acetylated oil, accurately weighed, for the subsequent saponification. Calculate the per cent of Geraniol by the following formula:

Per cent of total alcohols, calculated as Geraniol, in the oil tested =

$$A \times 7.712$$

$$B - (A \times 0.021)$$

A is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken. B is the weight of acetylated oil taken.

Descriptive Characteristics

Stability:

Alkali: Relatively unstable in the presence of alkali.

Acids: Unstable, esterification takes place in the presence of some organic acids. Many strong inorganic acids cause decomposition.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oil: Soluble in all proportions in most fixed oils.

Glycerine: Practically insoluble.

Mineral Oil: Usually forms cloudy solutions.

Propylene Glycol: Soluble usually with opalescence or turbidity.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized or clean black iron containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for Citronella Oil—Java Type

Other General Names

The oil of commerce is generally characterized by the geographic origin, e.g., Java, Guatemala, Formosa, etc., and differs from the Ceylon oil in both composition and odor.

Botanical Nomenclature

Andropogon Nardus (L.), *Cymbopogon Nardus* (Rendle).

Family: Gramineae.

The grass used for production of the Java type oil is referred to as the "maha pengri" type, as distinguished from the "lena batu," which is used for the production of the Ceylon type oil.

Preparation

By direct steam distillation of the freshly cut or partially dried grasses.

Physical and Chemical Constants

Color and appearance—The Java type Citronella Oil is characterized by a light yellow to tan color, low viscosity, and pronounced aldehydic odor.

Specific Gravity 15°/15° C.: 0.883 to 0.900.

Optical Rotation: -0° 30' to -6°.

Refractive Index @ 20° C.: 1.4660 to 1.4745.

Total Aldehydes as Citronellal: 30% to 45%.

The aldehyde content of individual drums may show a wide variation; however, bulk shipments are generally required to meet an average minimum citronellal content of 35%.

Total Alcohols as Geraniol: 85% to 97%.

Solubility:

Clearly soluble at all dilutions between 1 and 2 volumes of 80% alcohol and may become opalescent on further dilution.

Assay:

Total Aldehydes as Citronellal:

Proceed as directed in the hydroxylamine method for aldehydes (see Determinations G.T. D), using approximately 2.5 grams of sample, accurately weighed. The difference in the cc of N/2 HCl required for both titrations multiplied by 0.07712 indicates the weight in grams of total aldehydes calculated as citronellal in the sample taken.

Assay:

Total Alcohols as Geraniol:

Proceed as directed for the determination of total alcohols (see Determination G.T. B), with the following modifications:

1. Use 2 grams of anhydrous sodium acetate for acetylation.

2. Reflux the resulting acetylation mixture for two hours.

Calculate the percentage of total alcohols as geraniol, employing the following formula:

$$\% \text{ Total Alcohols} = \frac{A \times 7.712}{B - (A \times 0.021)}$$

A is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

B is the weight of acetylated oil taken.

Descriptive Characteristics

Stability:

Alkali: Moderately stable to weak alkali at normal temperatures. Unstable in the presence of concentrated alkali at elevated temperatures.

Acids: Decomposes in the presence of mineral acids. Moderately stable to weak organic acids.

Solubility:

Soluble in all proportions with Benzyl Benzoate, Diethyl Phthalate and most fixed oils.

Soluble with cloudiness in mineral oil and Propylene Glycol.

Insoluble in Glycerine.

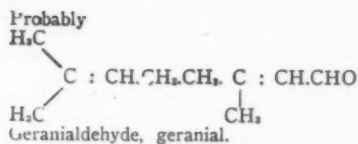
Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized or black iron containers are suitable provided long storage is not contemplated.

Storage

Store in tight, full containers in a cool place protected from light.

Specifications and Standards for CITRAL PURE



Mol. Wt. 152.12

Preparation

Obtained by reaction with Sodium Sulphite or Bisulphite with further purification by distillation and chemical processes, or can also be prepared by the oxidation of the alcohols such as geraniol, nerol and linalool by means of chromic acid or other oxidizing substances.

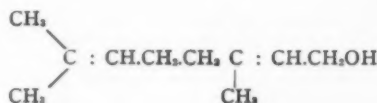
Physical and Chemical Constants

Color and appearance—A mobile, pale yellow liquid having a strong lemon odor.

Specific Gravity @ 15° C.: 0.891 to 0.897.

Optical Rotation: Inactive.

Refractive Index @ 20° C.: 1.4860 to 1.4900.



Mol. Wt. 154.24

Solubility: Soluble in 7 volumes of 60% alcohol.

Sodium Bisulphite Solubility Test

Introduce 5 cc of Citral into a 100 cc Cassia Flask and add 5 cc of a 30% solution of freshly prepared Sodium Bisulphite. Shake the cassia flask in a water bath for 2 minutes, then add 50 cc of additional bisulphite solution and shake flask in the water bath until completely reacted, which is indicated by an apparently clear solution. Then add enough hot distilled water to raise the meniscus within the graduated portion of the flask. No oil separates when the solution is cooled.

Citral Content

Not less than 97%.

Method: Proceed as directed in the hydroxylamine method for aldehydes (See Determinations G.T. D), using approximately 1 gram of sample, accurately weighed. The difference in the cc of N

— HCL required for both titrations 2 multiplied by 0.07611 indicates the weight in grams of Citral in the sample taken for assay.

Solubility

Benzyl Benzoate: All proportions.

Diethyl Phthalate: All proportions.

Fixed Oils: All proportions.

Glycerine: Insoluble.

Mineral Oil: All proportions.

Propylene Glycol: All proportions.

Stability

Alkali: Not stable.

Acids: Not stable.

Containers

Citral should preferably be shipped in glass. Good grade tins may be used if long storage is not contemplated.

Storage

Store preferably in tight full containers in a cool place protected from light.

Specifications and Standards for Geraniol

Preparation

Obtained from such essential oils as Citronella Java and Palmarosa Oil, and other essential oils.

Physical and Chemical Constants

Color and Appearance—Colorless liquid, having a rose-like odor.

Specific Gravity 15° C.: .870 to .890.

Optical Rotation: —2° to +2°.

Refractive Index @ 20° C.: 1.4710 to 1.4780.

Solubility in Alcohol—Soluble in two and more volumes of 70% alcohol.

Total Alcohol Content—Not less than 88% calculated as $C_{10}H_{18}OH$.

Method: Proceed as directed for the determination of total alcohols (See Determinations G.T. B), using approximately 1.2 gms of acetylated oil, accurately weighed for the saponification. Calculate the percentage of total alcohols as geraniol, using the following formula:

$$\text{Total Alcohols} = \frac{A \times 7.712}{B - (A \times .021)}$$

"A" is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

"B" is the weight of acetylated oil.

Ester Content—Not more than 1% calculated as Geranyl Acetate.

Method: Proceed as directed for the de-

termination of esters (See Determinations G.T. A), using approximately 5 gms. of sample accurately weighed. The number of cc of half normal alcoholic potassium hydroxide consumed in the saponification, multiplied by .0981 indicates the gms. of ester calculated as geranyl acetate.

Aldehyde Content—Not more than 1% calculated as Citronellal.

Method: Proceed as directed in the Hydroxylamine Method for aldehydes (See Determinations G.T. D), using approximately 5 gms. of sample accurately weighed and allow the test to stand for 15 minutes at room temperature. The difference in the number of cc required for the titration of the blank and the sample multiplied by .07712 indicates the number of grams of aldehyde calculated as citronellal.

Descriptive Characteristics

Solubility:

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerine: Insoluble.

Propylene Glycol: Soluble in all proportions.

Stability:

Acids: Not stable.

Alkali: Fairly stable at moderate temperatures.

Containers

Should be shipped preferably in glass or tin-lined containers.

Storage

Store in tight, full containers in a cool place, protected from light.

Specifications and Standards for GERANYL ACETATE

$C_{10}H_{17}O_2$, C_8H_{14}

Mol. Wt. 196.28

Preparation

Obtained from Geraniol by acetylation.

Physical and Chemical Constants

Color and Appearance—Colorless liquid having a pleasant flowery odor.

Specific Gravity @ 15° C.: 0.907 to 0.918.

Optical Rotation: -2° to $+2^\circ$.

Refractive Index @ 20° C.: 1.4580 to 1.4640.

Ester Content: Not less than 90%.

Proceed as directed for the determination of esters (See G.T. A), using approximately 1.0 gram of sample accurately weighed. The number of cc of half normal potassium hydroxide solution consumed in the saponification, multiplied by 0.0981, indicates the number of grams of ester calculated as Geranyl Acetate in the sample taken for assay.

Solubility in Alcohol—Soluble in 8 volumes of 70% alcohol.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerine: Insoluble.

Mineral Oil: Soluble in all proportions.

Propylene Glycol: Not completely soluble in all proportions.

Stability:

Acids: Fairly stable to weak organic acids.

Alkali: Unstable to alkalis, due to saponification of the ester with subsequent liberation of free geraniol.

Containers

Geranyl Acetate should be shipped in glass, aluminum, tin-lined or good quality galvanized iron containers.

Storage

Store preferably in tight, full containers in a cool place, protected from light.

Specifications and Standards for CITRONELLOL

Preparation

Reduction of citronellal or geraniol or obtained from essential oils such as geranium and citronella, etc.

Physical and Chemical Constants
Color and Appearance—Colorless liquid having a roselike odor.

Specific Gravity 15° C.: .849 to .868.

Optical Rotation: -3° to $+3^\circ$

Refractive Index @ 20° C.: 1.4660 to 1.4600.

Solubility in Alcohol—Soluble in two and more volumes of 70% alcohol.

Total Alcohol Content—Not less than 90% calculated as $C_{10}H_{18}OH$.

Method: Proceed as directed for the determination of total alcohols (See Determinations G.T. B), using approximately 1.2 gms. of the acetylated oil accurately weighed for the saponification. Calculate the percentage of total alcohols as citronellol, using the following formula:

$$A \times 7.813$$

$$\text{Total Alcohols} = \frac{B - (A \times .021)}{7.813}$$

"A" is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

"B" is the weight of acetylated oil.

Ester Content—Not more than 1% calculated as citronellyl acetate.

Method: Proceed as directed for the determination of esters (See Determinations G.T. A), using approximately 5 gms. of sample accurately weighed. The number of cc of half normal alcoholic potassium hydroxide consumed in the saponification, multiplied by .0991, indicates the gms. of ester calculated as citronellyl acetate.

Aldehyde Content—Not more than 1% calculated at Citronellal.

Method: Proceed as directed in the Hydroxylamine Method for aldehydes (See Determinations G.T. D), using approximately 5 gms. of sample accurately weighed and allow the test to stand for 15 minutes at room temperature. The difference in the number of cc required for

the titration of the blank and the sample multiplied by .07712 indicates the number of gms. of aldehyde calculated as citronellal.

Descriptive Characteristics

Solubility:

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerine: Insoluble.

Propylene Glycol: Soluble in all proportions.

Stability:

Acids: Fairly stable to dilute acids.

Alkali: Fairly stable.

Containers

Should be shipped preferably in glass or tin-lined containers. Good quality galvanized or black iron containers are suitable provided long storage is not contemplated.

Storage

Store in tight, full containers in a cool place, protected from light.

Specifications and Standards for SAFROL

$C_{10}H_{18}O$

M.W. = 162.13

Preparation

By isolation from brown Camphor Oil, Oil Ocotea Cymbarum and Oil Sassafras.

Physical and Chemical Constants

Specific Gravity @ 15° C.: 1.100 to 1.107.

Optical Rotating @ 15° C.: $-0^\circ 30'$ to $+0^\circ 30'$.

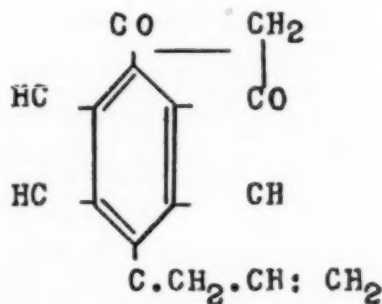
Refractive Index @ 20° C.: 1.5363 to 1.5385.

Congearing Point: 10° C. to 11.2° C.

Solubility 90% Alcohol: 3 volumes.

Color: Water white to slight yellow.

Odor: Characteristic of Sassafras.



Descriptive Characteristics

Solubility:

Benzyl Benzoate: All proportions.

Fixed Oils: All proportions.

Glycerine: Insoluble.

Mineral Oil: Soluble.

Propylene Glycol: Slightly soluble.

Water: Insoluble.

Stability:

Alkali: In the presence of strong alkali a pink or red discoloration changing to yellow or brown on standing is often observed.

Acids: In the presence of some organic and inorganic acids a change is noted, the degree of change depending upon the conditions.

Oxidation: Relatively resistant to oxidation at ordinary temperatures and conditions.

Containers

Safron should be shipped in glass, aluminum or tin-lined containers. Good quality galvanized containers are suitable when long periods of storage are not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for

NITRO MUSKS

Preparation

Nitration of the corresponding benzene derivative.

Physical and Chemical Constants

Musk Xylol.

Color and Appearance: Yellow crystalline powder or needle-like crystals.

Odor: Suggestive of musk.

Melting Range: 112.5 to 114.5° and 104 to 106° C.

Two melting points have been observed for Musk Xylol, a low melting or "labile" modification melting at 104-106°, and the higher melting or "stable" form melting at 112.5° to 114.5°. When the

low-melting form is encountered, permit the melt to resolidify and redetermine the melting point. This procedure permits the necessary transition to the higher melting form. A persistent low melting point, after solidification, generally indicates a contaminated or unrefined product.

Musk Ambrette: Color and appearance: Yellow granular crystals.

Odor: Powerful musk-like odor with suggestion of Ambrette seeds.

Melting Range: 84° to 86° C.

Musk Ketone: Color and appearance: Pale yellow platelets or fine crystalline powder.

Odor: Musklime odor considered as more closely resembling natural musk than other nitrated products.

Melting Range: 134.5 to 136.5° C.

Descriptive Characteristics

Stability:

The nitro musks are relatively stable to oxidation, dilute acids, and alkalis, although some discoloration may be noted with Musk Ambrette in the presence of alkaline materials. Exposure to sunlight generally effects a discoloration of the nitro-musks.

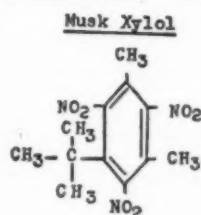
Containers

Small quantities in paper-lined tin cans. Large quantities are usually packed in wooden barrels or fiberboard and press-board containers.

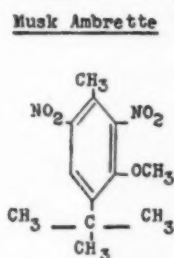
Storage

The nitro musks are best preserved by storage in a cool place protected from light.

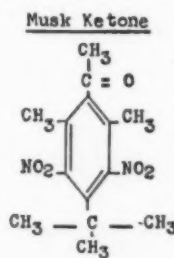
Solubility:	Musk Xylol	Musk Ambrette	Musk Ketone
Alcohol 95% 25° approx.	Sl. Sol. (0.7 gms. per 100 cc)	Sl. Sol. (2.6 gms. per 100 cc)	Sl. Sol. (1.4 gms. per 100 cc)
Benzyl Benzoate 25° approx.	Sol. (28 gms. per 100 cc)	Sol. (56 gms. per 100 cc)	Sol. (28 gms. per 100 cc)
Diethyl Phthalate 25° approx.	Sol. (17 gms. per 100 cc)	Sol. (44 gms. per 100 cc)	Sol. (16 gms. per 100 cc)
Fixed Oils	Sol.	Sol.	Sol.
Volatile Oils	Sol.	Sol.	Sol.
Glycerine	Insol.	Insol.	Insol.
Propylene Glycol	Insol.	Insol.	Sl. Sol.
Mineral Oil	Sol.	Sl. Sol.	Sl. Sol.
Water	Insol.	Insol.	Insol.



$C_{12}H_{13}O_4N_3$
M.W. = 297.45
2, 4, 6-Trinitro 1, 3-Dimethyl 5-tert-butyl Benzene



$C_{12}H_{13}O_4N_3$
M.W. = 268.41
2, 6-Dinitro 3-Methoxy 4-tert-butyl Toluene



$C_{14}H_{15}O_4N_3$
M.W. = 294.44
3, 5-Dinitro 2, 6-Dimethyl 4-tert-butyl Acetophenone

OIL PALMAROSA Specifications and Standards for

Other General Names

Oil Geranium, East Indian.

Oil Geranium, Turkish.

Botanical Nomenclature

Cymbopogon Martini Stapf. var. *Motia*.

Preparation

Obtained by steam distillation of the partially dried grass.

Physical and Chemical Properties

Color and Appearance: A light yellow to yellow oil. As imported, it is often hazy and brownish because of the crude methods of production.

Specific Gravity at 15° C.: 0.885 to 0.897.

Optical Rotation -2° to $+3^\circ$.

Refractive Index at 20° C.: 1.4730 to 1.4775.

Ester Contents: 4% to 13% (Java oils: as high as 18%).

Proceed as directed for the Determination of Esters (see G.T. A.), using approximately 5.0 grams of the oil, accurately weighed. The number of cc of half-normal alcoholic potassium hydroxide consumed in the saponification, multiplied by 0.0981, indicates the number of grams of esters, calculated as Geranyl Acetate, in the oil taken for assay.

Total Alcohol Content: 88% to 94%.

Proceed as directed for the Determination of Total Alcohols (see G.T. A.), using approximately 1 gram of the acetylated oil, accurately weighed, for the subsequent saponification. Calculate the percentage of Total Alcohols, calculated as Geraniol, by the following formula:

$$\text{Per cent of Total Geraniol} = \frac{A \times 7.712}{B - (A \times 0.021)} \times \left\{ 1 - (E \times 0.0021) \right\}$$

A is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

B is the weight of acetylated oil taken.

E is the percentage of ester.

Solubility in Alcohol: Soluble in 2 volumes of 70% alcohol.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerin: Relatively insoluble.

Mineral Oil: Soluble, usually with opalescence or turbidity.

Propylene Glycol: Soluble in all proportions.

Stability:

Acids: Unstable in the presence of strong acids.

Alkali: Relatively stable in the presence of alkalis at moderate temperatures.

Containers

Should be shipped preferably in glass or tin-lined containers. Good quality galvanized containers are suitable, provided long storage is not contemplated.

Storage

Store in tight, full containers in a cool place, protected from light.

Specifications and Standards for BENZYL ACETATE

$C_9H_{10}O_2$ Mol. Wt. 150.17

Preparation

Prepared by the interaction of Benzyl Chloride and Sodium Acetate in the presence of glacial acetic acid and by acetylation of Benzyl Alcohol.

Physical and Chemical Constants

Color and Appearance: Colorless liquid having a characteristic flowery odor.

Specific Gravity @ 15° C.: 1.059 to 1.062.

Refractive Index @ 20° C.: 1.5015 to 1.5035.

Acid Value: Maximum 1.0

Proceed as directed for the determination of Acid Value. (See Determinations G.T. E.)

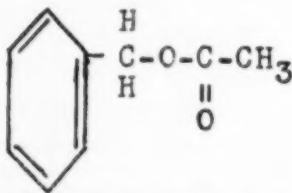
Ester Content: 98% Minimum.

Assay: Proceed as directed for determination of Esters. (See Determinations G.T. A) using approximately 0.9 gm sample accurately weighed. The number of cc. of half-normal Potassium Hydroxide solution consumed in the saponification multiplied by 0.0751 indicates the number of grams of ester calculated as Benzyl Acetate in the sample taken for assay. (This result should be corrected for Acid Value. See Determination G.T. E.)

Chlorine: Negative.

Proceed as directed for the determination of Chlorinated Compounds. (See Determinations G.T. G.)

Solubility in Alcohol: Soluble in 5 volumes of 60% Alcohol.



Descriptive Characteristics

Stability:

Alkali: Unstable to alkali due to saponification of the ester with subsequent liberation of free Benzyl Alcohol.

Acids: Fairly stable to weak organic acids.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Alcohol: Soluble in all proportions.

Mineral Oil: Soluble.

Propylene Glycol: Soluble.

Glycerine: Insoluble.

Water: Insoluble.

Containers

Should be shipped in glass, aluminum or tin-lined containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for LINALYL ACETATE

(90% from Bois de Rose Brazilian)
 $C_{10}H_{18}O_2$ Mol. Wt. 196.28

Preparation

Obtained from Bois de Rose Brazilian by acetylation and subsequent fractionation.

Physical and Chemical Constants

Color and Appearance—Colorless to slightly yellow having a pleasant flowery odor.

Specific Gravity 15° C.: 0.908 to 0.920.

Optical Rotation: —1 to +1.

Refractive Index 20° C.: 1.450 to 1.458.

Acid Value: Not more than 2.

Ester Content: Not less than 90%.

Assay

Proceed as directed for determination of esters (See Determinations G.T. A) using approximately 1.0 gm. sample accurately weighed. The number of cc of half-normal Potassium Hydroxide Solution consumed in the saponification multiplied by 0.0981 indicates the number of grams of ester calculated as Linalyl Acetate in the sample taken for assay. This result should be corrected for Acid Value (See Determination G.T. E.)

Descriptive Characteristics

Solubility in Alcohol: Soluble in 5 volumes of 70% Alcohol.

Solubility:

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Alcohol: Soluble in all proportions.

Propylene Glycol: Slightly soluble; about 5%.

Water: Insoluble.

Glycerine: Insoluble.

Stability:

Acids: Not very stable; strong acids transform Linalyl Acetate into terpenic products.

Alkali: Unstable to alkalis due to saponification of the ester with subsequent liberation of free Linalool.

Containers

Linalyl Acetate should be shipped in glass, aluminum, tin-lined or good quality galvanized iron containers.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for OIL CEDARWOOD and CEDARWOOD TEXAS

Botanical Nomenclature

Juniperus virginiana, L.: Oil of Red Cedarwood.

Oil Cedar.

Oil Cedarwood American.

Juniperus Mexicana, Scheide, and closely related species: *Oil Cedarwood Texas*.

Preparation

By steam distillation of the chopped and ground wood.

Physical and Chemical Constants (See Table Below)

Descriptive Characteristics

Stability:

Alkali: Fairly stable to alkali.

Acids: Fairly stable to weak acids.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Relatively insoluble.

Mineral Oil: Soluble in all proportions.

Propylene Glycol: Relatively insoluble.

Containers

Should be shipped in glass, tin-lined, or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for METHYL ANTHRANILATE

$C_9H_9O_2N$ Mol. Wt. 151.08

Preparation

Esterification of anthranilic acid.

Physical and Chemical Properties

Color and Appearance: Colorless to pale yellow liquid with bluish fluorescence, having an odor of the grape type.

Specific Gravity @ 15° C.: 1.167 to 1.175.

Refractive Index @ 20° C.: 1.5820 to 1.5840.

Congealing Point: Min. 23.8° C.

Proceed as directed for the determination.

	<i>Juniperus Virginiana</i>	<i>Juniperus Mexicana</i>
Color and Appearance:	Colorless to light yellow slightly viscous liquid	Colorless to yellow slightly viscous liquid
Specific Gravity @ 15° C.:	0.945 to 0.960	0.950 to 0.960
Optical Rotation:	—27° to —45°	—35° to —50°
Refractive Index @ 20° C.:	1.5020 to 1.5070	1.5040 to 1.5070
Solubility in Alcohol:	Soluble in 5 volumes of 95% alcohol	Soluble in all proportions of 95% alcohol

tion of Congealing Temperature. (See U.S.P. XIII, page 629.)

Solubility in Alcohol: Soluble in 5 volumes and more of 60% alcohol.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: All proportions.
Diethyl Phthalate: All proportions.
Fixed Oils: All proportions.
Glycerine: Insoluble.
Mineral Oil: Partly soluble.
Propylene Glycol: All proportions.
Volatile Oils: Partly or all proportions.

Stability:

Acids—Fairly stable to organic acids.
Alkali—Stable in weak alkaline media, saponified by caustic alkali.

Containers

Should be shipped in glass, aluminum or in tin-lined containers.

Storage

Store preferably in tight, full containers in a cool place, protected from light. Prolonged storage or exposure to light may cause discoloration.

Specifications and Standards for ACETOPHENONE

C₈H₈O Mol. Wt. 120.14

Methyl phenyl ketone; Acetyl benzene; Hypnone.

Acetophenone is found in nature and is produced synthetically. Most acetophenone consumed is of the synthetic type. It is used in perfumery and the pharmaceutical trade.

Preparation

It may be synthesized from benzene, anhydrous aluminum chloride and acetic anhydride or acetyl chloride by the Friedel-Crafts synthesis and by the oxidation of ethyl benzene.

Physical & Chemical Properties

Color, Appearance and Odor: It is an almost colorless liquid at room temperature having a very sweet pungent odor.

Specific Gravity at 25°/25°: 1.025—1.028.

Refractive Index at 20°C.: 1.5330—1.5350.

Congeeing Point: 19°C. minimum.

Proceed as directed for determination of congealing points. (See H)

Purity: Minimum of 98% by the hydroxylamine method. (See D)

Use approximately 1.0 gm. sample accurately weighed. The difference in the cc of N/2 HCl required for both titrations multiplied by 0.06007 indicates the weight in grams of Acetophenone in the sample taken for Assay.

Chlorine: Negative. Proceed as directed for the determination of chlorinated compounds. (See G)

Solubility in Alcohol: Soluble in 5 volumes of 50% Alcohol.

Descriptive Characteristics

Stability:

Acids: Relatively stable in most acids.
Alkali: Relatively stable.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Mineral Oil: Slightly soluble.

Propylene Glycol: Soluble in all proportions.

Glycerine: Insoluble.

Containers

Should be shipped in glass, aluminum, tin-lined or iron containers.

Storage

No unusual precautions.

Specifications and Standards for OIL BOIS DE ROSE BRAZILIAN

Other General Name

Oil Rosewood.

Botanical Nomenclature

1. Indefinite.

2. Possibly:

(a) ANIBA ROSAEODORA var. Amazonica (Ducke), Family: Lauraceae.

(b) ANIBA PARVIFLORA (Mez), Family: Lauraceae.

(c) OCOTEA CAUDATA (Mez.) (LICARIA GUIANENSIS) (Aubl.), Family: Lauraceae.

(d) PROTIUM (ICICA) ALTISIMUM (March), Family: Burseraceae.

Preparation

By steam distillation of wood.

Physical and Chemical Constants

Specific Gravity @ 15°C.: 0.8750—0.8950

Optical Rotation —4° to +5°

Refractive Index @ 20°C. 1.4620—1.4685

Total Alcohols: 84 to 92%

Proceed as directed for the determination of Linalool and oils containing Linalool. (See C.) Use approximately 1.2 gms. of acetylated oil accurately weighed for the subsequent saponification.

Solubility—Soluble in some dilution between 3.5 and 6 volumes of 60% alcohol and in 2 volumes of 70% alcohol.

Color and appearance—Pale yellow to yellow liquid.

Descriptive Characteristics

Stability:

Alkali: Relatively stable to alkali, although some change takes place.

Acids: In the presence of some organic acids esterification of the alcohol takes place. In the presence of many strong inorganic acids, decomposition takes place. Degree of change depends upon conditions.

Solubility

Benzyl Benzoate: Generally soluble.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Slightly soluble.

Mineral Oil: It is usually soluble in ½ volume of mineral oil, but sometimes becomes opalescent to turbid; when further additions of the solvent are made.

Propylene Glycol: Soluble in all proportions.

Containers

Should be shipped in glass, tin lined or aluminum containers. Good quality galva-

nized containers are suitable when long storage is not contemplated.

Storage

Store preferably in well stoppered full containers, in a cool place protected from light.

Specifications and Standards for OIL PETITGRAIN PARAGUAY

Other General Names

Oil Petitgrain South American.

Botanical Nomenclature

Citrus bigaradia, Risso.

Preparation

Obtained by steam distillation from the leaves and twigs of the bitter orange tree; at times the fruit adhering to the branches is distilled with it, indicated by a dextrorotation due to some peel oil.

Physical and Chemical Properties

Color: Yellowish to slightly brown.

Specific Gravity @ 15° C.: 0.885 to 0.895.

Optical Rotation: Mostly laevorotatory up to —3° sometimes dextrorotatory up to +3°.

Solubility: Soluble at some dilution between 2 and 4 volumes of 70% alcohol; however, upon further dilution it frequently becomes opalescent or turbid.

Refractive Index @ 20° C.: 1.4580 to 1.4650.

Esters: 45% to 55% (occasionally as low as 40% and as high as 60%).

Proceed as directed for the determination of esters (see A), using approximately 2 grams of the oil, accurately weighed. The number of cc. of 0.5 N alcoholic potassium hydroxide consumed in the saponification, multiplied by 0.0981, indicates the number of grams of esters, calculated as linalyl acetate, in the oil taken for assay.

Descriptive Characteristics

Stability:

Alkali: Unstable in alkalies due to the hydrolysis of some of the esters and the liberation of free linalool and other alcohols.

Acids: In the presence of some organic or inorganic acids a change is noted, degree of change depending upon conditions.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Slightly soluble.

Mineral Oil: Usually soluble with opalescence or turbidity.

Propylene Glycol: Usually soluble with opalescence.

Containers

Should be shipped preferably in glass, tin-lined, or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in well-stoppered, full containers, in a cool place protected from light.

Specifications and Standards for Oil Spike

Other General Names

Oil Lavender Spike.
Oil Lavender Spanish.
Oil Spanish Spike.
Oil Aspic.

Botanical Nomenclature

Lavandula latifolia, Vill. (*Lavandula Spica* D.C.), Family: LABIATAE.

Preparation

By steam distillation of the flowers.

Physical and Chemical Constants

Color and appearance: Oil Spike is a pale yellow to yellow liquid, having a camphoraceous, lavender-like odor.

Specific Gravity @ 15° C.: 0.900—0.915.

Optical Rotation: —5° to +5°.

Refractive Index 20° C.: 1.4630 to 1.4680.

Esters as Bornyl Acetate: 1.5 to 3.0%.

Proceed as directed for the determination of esters, see A, using approximately 10 grams of Oil Spike, accurately weighed. The number of CC of half normal alcoholic potassium hydroxide consumed in the saponification, multiplied by 0.0981, indicates the number of grams of esters calculated as Bornyl Acetate ($C_{10}H_{18}O_2$) in the oil taken for assay.

Total Alcohols as Borneol: 30–40%.

Proceed as directed for the determination of total alcohols, Page B, using approximately 2.5 grams of the acetylated oil, accurately weighed, for the subsequent saponification. Calculate the per cent of total alcohols as Borneol by the following formula:

Per Cent of total Borneol ($C_{10}H_{18}OH$) in the oil tested

$$A \times 7.712 \times [1 - (E \times 0.0021)] \\ B - (A \times 0.021)$$

A is the result obtained by subtracting the number of cc of half normal sulphuric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

B is the weight of acetylated oil taken, and E is the per cent of esters calculated as Bornyl Acetate.

Solubility in Alcohol: Soluble in some dilution between 1 and 3 volumes of 70% alcohol, however, upon further dilution it frequently becomes hazy.

Descriptive Characteristics

Stability:

Alkali: Relatively stable to alkali, although some change takes place.

Acids: Fairly stable to weak acids.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerin: Slightly soluble.

Mineral Oil: Usually forms cloudy solutions.

Propylene Glycol: Soluble in all proportions.

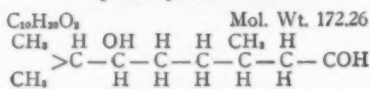
Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in well stoppered full containers, in a cool place protected from light.

Specifications and Standards For Hydroxycitronellal



(Various other structures are suggested)

Preparation

Obtained by the hydration of citronellal. The basic citronellal used may be from any source such as the optically active variety from Java Citronella or the optically inactive variety from Eucalyptus Citriodora.

Physical and Chemical Constants

Color and appearance: Viscous colorless liquid having a sweet odor of the lily type.

Specific Gravity @ 15° C.: 0.925 to 0.930.

Optical Rotation: Depends upon the optical activity of the raw material. When prepared from the Java type + 9 to + 10.5; when prepared from Eucalyptus Citriodora type + 0.5 to — 0.5.

Refractive Index @ 20°: 1.448—1.450.

Hydroxycitronellal Content: Not less than 95%. (See D.)

Assay — Hydroxycitronellal determination:

Proceed as directed in the hydroxylamine method for aldehydes (see D) using approximately 1.3 gm. of sample, accurately weighed. The difference in the cc of N/2 HCl required for both titrations multiplied by 0.0861 indicates the weight in grams of Hydroxycitronellal in the sample taken for assay.

Solubility in Alcohol: Soluble in 1½ and more volumes of 50% alcohol. Soluble in all proportions of 60% alcohol.

Bisulfite Test for non-aldehydic impurities: Add 9 cc of NaHSO₃ solution* to .5 cc Hydroxycitronellal. Shake vigorously for one minute. Clear solution should be obtained (terpenes). Solution should have no minty odor (isopulegol).

* (Bisulfite Solution—Prepare a fresh solution of 30% NaHSO₃ anhydrous by weight. To this add 4% of 10% Na₂CO₃ solution to cut down free SO₂. Solution to be filtered clear before use if necessary.)

Descriptive Characteristics

Stability:

Acids: Easily resinified by acids.

Alkali: Easily resinified by strong alkali.

Oxidation: Very readily oxidized by exposure to air.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerin: Slightly soluble.

Mineral Oil: Slightly soluble.

Propylene glycol: Soluble in all proportions.

Water: Slightly soluble (app. 5%).

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Galvanized containers not recommended.

Storage

Store preferably in well-stoppered, full containers in a cool place protected from light.

Specifications and Standards For DIPHENYL OXIDE



Mol. Wt. 170.2

Diphenyl Oxide is a synthetic aromatic, crystalline at or below room temperature. It is widely used in soap perfumery for its stability and its low price. Its odor simulates that of geranium leaves.

Preparation

Diphenyl oxide can be prepared by the reaction of chlorobenzene with phenol in the presence of strong caustic.

Physical & Chemical Constants

Color, Appearance and Odor: Diphenyl oxide is a nearly colorless liquid, solidifying at or below room temperature, with a powerful odor of geranium leaves.

Specific Gravity at 25°/25° C.: 1.072—1.074.

Refractive Index at 25° C.: 1.5780—1.5790.

Congealing Point: +26.7° to +27.0° C.

Method: Proceed as directed for the determination of congealing point. (See H)

Descriptive Characteristics

A satisfactory quality of Diphenyl Oxide should not reveal any phenolic off-odor when in the liquid state.

Stability:

Acid and Alkali: Stable in contact with mild alkali or acid at ordinary temperatures and conditions as encountered in the preparation and storage of cosmetics and soaps.

Solubility:

Benzyl Benzoate: Very Soluble.

Diethyl Phthalate: Very Soluble.

Fixed Oils: Very Soluble.

Alcohol: Very Soluble.

Mineral Oil: Very Soluble.

Propylene Glycol: Sparingly Soluble.

Glycerine: Practically insoluble.

Water: Practically insoluble.

Containers

Should be shipped in glass, galvanized or tin-lined steel containers.

Storage

No unusual precautions.

Specifications and Standards for Oil of Siberian Fir Needles

Physical and Chemical Constants

Color & Appearance: almost colorless or faintly yellow.

Specific Gravity @ 25°C: .898 to .912.
(Correction factor from $n^{\circ}/n^{\circ}\text{C}$: 0.0056 per °C.)

Optical Rotation: -34° to -43°.

Refractive Index @ 20°C: 1.4685 to 1.4730.

Solubility in Alcohol: Soluble in 1 volume of 90 per cent alcohol. Occasionally hazy upon further dilution.

Ester Content: 32 per cent to 44 per cent calculated as Bornyl Acetate.

Proceed as directed for the determination of esters using approximately 2 grams of oil accurately weighed. The number of cc of N KOH consumed in

the saponification multiplied by .0981 indicates the number of grams of esters calculated as Bornyl Acetate in the sample taken for assay.

Descriptive Characteristics

Stability:

Alkali: Unstable due to the hydrolysis of the ester.

Acids: Fairly stable to weak organic acids. Unstable in the presence of strong acids.

Solubility:

Benzyl Benzoate: Soluble.

Fixed Oils: Soluble in most fixed oils.

Glycerine: Insoluble.

Mineral Oil: Soluble.

Propylene Glycol: Insoluble.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized containers are suitable if long storage is not contemplated.

Storage

Store preferably in tight full containers in a cool place protected from light.

Specifications and Standards For

OIL GERANIUM REUNION

Preparation

Obtained by steam distillation of the fresh plants, harvested at the period of initial bloom.

Physical and Chemical Properties

Color & Appearance: A yellowish brown oil, having a strong, heavy rose-like odor with a characteristic minty top-note.

Specific Gravity @ 25°/25°C: 0.883 to 0.890.

(Gravity factor from $n^{\circ}/n^{\circ}\text{C}$: 0.00059 per °C.)

Optical Rotation: -8° to -14°.

Refractive Index @ 20°C: 1.4629 to 1.4680.

Acid Value: Not more than 11. Proceed as directed for the determination of Acid Value using approximately 5 grams of the sample, accurately weighed, and 15-cc of water as diluent instead of alcohol. It will be necessary to agitate the mixture thoroughly during the titration to keep the oil in suspension.

Ester Value: 52 to 76 (indicating ap-

proximately 22 per cent to 32 per cent ester, calculated as Geranyl Tiglate). Proceed as directed for the determination of Esters using approximately 2.5 grams of the oil accurately weighed. Calculate the Saponification Value by the following formula:

$$S.V. = \frac{28.05 \times a}{s}$$

where a = number of cc of 0.5N alcoholic potassium hydroxide solution consumed in the saponification and s = weight of the oil, in grams. Determine the Ester Value as follows:

$$E.V. = S.V. - A.V.$$

Ester Value After Acetylation: 209 to 229 (indicating approximately 68 per cent to 76 per cent total alcohol calculated as geraniol, not corrected for ester.)

Proceed as directed for the determination of Total Alcohols, using approximately 1.5 grams of the acetylated oil, accurately weighed, for the subsequent saponification.

Calculate the Ester Value After Acetylation by the following formula:

$$E.V.A.A. = \frac{28.05 \times a}{s}$$

where a = number of cc of 0.5N alcoholic potassium hydroxide solution consumed in the subsequent saponification, and s = weight of the acetylated oil, in grams.

Solubility in Alcohol: Soluble in 2.5 volumes of 70 per cent alcohol; upon further dilution, the solution occasionally becomes opalescent.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Practically insoluble.

Mineral Oil: Soluble usually with opalescence or turbidity.

Propylene Glycol: Soluble, usually with turbidity.

Stability:

Acids: Unstable in the presence of strong acids.

Alkali: Relatively stable to weak alkali, although Saponification of some of the ester may occur.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards For

OIL GERANIUM ALGERIAN

Preparation

Steam distillation of the leaves.

Physical and Chemical Constants

Color & Appearance: Light yellow to deep yellow liquid with characteristic odor resembling rose and geraniol.

Specific Gravity @ 25°/25°C: 0.886 to 0.898.

(Correction factor from $n^{\circ}/n^{\circ}\text{C}$: 0.00058 per °C.)

Optical Rotation: -7° to -13°.

Refractive Index @ 20°C: 1.4640 to 1.4720.

Acid Value: 1.5 to 9.5.

Proceed as directed for the determination of Acid Value using approximately 5 gms. of the sample accurately weighed, and 15-cc of water as diluent instead of alcohol. It will be necessary to agitate the mixture thoroughly during the titration to keep the oil in suspension.

Ester Value: 31 to 70 (indicating a 13 per cent to 29.5 per cent ester calculated as Geranyl Tiglate).

The Percentage of Geranyl Tiglate can be calculated by the following formulae: Ester Value \times = % of Geranyl Tiglate. Proceed as directed for the determination of esters using approximately 6 gms. of the oil accurately weighed. Calculate the Saponification Value by the following formulae:

$$S.V. = \frac{28.05 \times a}{s}$$

where a = the number of cc of 0.5N alcoholic potassium hydroxide solution consumed in the saponification and s = weight of the oil, in grams. Determine the Ester Value as follows:

$$E.V. = S.V. - A.V.$$

Ester Value after Acetylation: 203 to 234. (Indicating 66 per cent to 78 per cent of total alcohol calculated as geraniol not corrected for ester.)

Proceed as directed for the determination of Total Alcohols using approximately 1.9 gms. of the acetylated oil accurately weighed for the subsequent saponification. Calculate the Ester Value after Acetylation by the following formula:

$$E.V.A.A. = \frac{28.05 \times a}{s}$$

where a = the number of cc of 0.5N alcohol potassium hydroxide consumed in the subsequent saponification and s = the weight in gms of the acetylated oil used.

Percent total geraniol may be calculated by the following formula:

$$7.712 \times a$$

$$E.V.A.A. = \frac{s - (a \times 0.021)}{s}$$

This gives the total geraniol not corrected for ester.

Solubility in Alcohol: Soluble in 2 to 3 volumes of 70 per cent alcohol. On further addition of 70 per cent alcohol opalescence sometimes occurs which may be followed by separation of paraffin particles.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Practically insoluble.

Mineral Oil: Soluble in all proportions with opalescence after about 3 volumes.

Propylene Glycol: Soluble in all proportions, with opalescence after about 4 volumes.

Stability:

Alkali: Unstable in alkalis due to hydrolysis of some of the esters.

Acid: Exposure to anything more than mild organic acids risk deterioration of quality.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place, protected from light.

Specifications and Standards for Amyl Cinnamic Aldehyde

$C_{15}H_{18}O$ Mol Wt. = 202.28

Preparation

It is prepared by the condensation of benzaldehyde with heptaldehyde, usually in an alkaline medium.

Physical and Chemical Constants

Color & Appearance: Yellow liquid with a powerful floral odor which becomes suggestive of jasmin on dilution.

Specific Gravity @ 25°/25°C: 0.963 to 0.968.

(Correction factor from n^*_D : .0050 per °C.)

Refractive Index @ 20°C: 1.5520 to 1.5580.

Acid Value: Not more than 5.

Proceed as directed for the determination of acid value.

Aldehyde Content: Not less than 97 per cent.

Assay:

Proceed as directed for the determination of aldehydes (See Determinations G.T. #1-D) using an approximately 1.5 gm. sample accurately weighed. Allow sample and blank to stand at room temperature for one-half hour. The difference in cc of N/2 HCl between blank and sample titrations multiplied by 0.1012 indicates the weight in grams of Amyl Cinnamic Aldehyde in the sample taken for assay.

Chlorine: Negative.

Proceed as directed for the determination of chlorinated compounds.

Solubility in Alcohol: Clearly soluble in 4.5 and more volumes of 80 per cent alcohol.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Insoluble.

Mineral Oil: Soluble in all proportions.

Propylene Glycol: Insoluble.

Water: Insoluble.

Stability:

Relatively stable to dilute acids and alkalis.

Containers

Amyl Cinnamic Aldehyde should be shipped in glass, aluminum, steel or tin-lined containers.

Storage

Store in tight full containers in a cool place protected from light. Extremely susceptible to oxidation by air. Cannot be stored unless protected by a suitable anti-oxidant.

Specifications and Standards for Amyl Salicylate

Preparation

$C_{12}H_{16}O_3$ Mol. Wt. 208.25

It is prepared by esterification of salicylic acid with iso-amyl alcohol derived from fusel oils and other sources.

Color and Appearance

Colorless liquid with characteristic aromatic odor.

Sp. Gr. at 15°C: 1.053 to 1.059

Refractive Index at 20°: 1.5050 to 1.5080

Optical Rotation: ± 0 to $\pm 2.30^\circ$

Acid Value—Not more than 1.

Proceed as directed for the determination of acid value. Note—Instead of phenolphthalein a phenol-red indicator should be used.

Ester Content—Not less than 99 per cent.

Assay: Place about 2 cc of Amyl Salicylate, accurately weighed in a 250 cc flask, add 50 cc of half-normal alcoholic potassium hydroxide, connect the flask with a reflux condenser, and heat the mixture on a water bath for 2 hrs. Add 50 cc water, a few drops of phenol red pH indicator and titrate the excess of alkali with half-normal hydrochloric acid. Each cc of half-normal alcoholic potassium hydroxide consumed in the saponification correspond to .1041 gm. of amyl salicylate.

Solubility in Alcohol—Soluble in 2 to 3 vol. of 90 per cent alcohol.

Descriptive Characteristics

Solubility—

Diethyl Phthalate—Soluble in all proportions.

Benzyl Benzoate—Soluble in all proportions.

Mineral Oil—Soluble in all proportions.

Fixed Oils—Soluble in all proportions.

Glycerine—Insoluble.

Propylene Glycol—Insoluble.

Stability—

Acid—Stable to weak acids.

Alkali—Unstable in presence of strong alkali due to saponification of the ester.

Containers

Should be shipped in glass or tin-lined drums.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards For Oil of Sage Dalmatian

Oil of Sage Dalmatian is distilled from *Salvia officinalis* L. It should not be confused with sage oils distilled from other botanicals; e.g. Oil of Spanish Sage, Oil of Clary Sage, Oil of American Sagebrush. The true Dalmatian Sage Oil is produced on the Dalmatian Islands and the adjacent coast of the Adriatic Sea.

Early in the commercial development of this product, there occurred two types

of oil; "high-test" "low test" oils which were distinguishable by their ketone contents. Today only the "high-test" oils are commercially available since this type is preferred by the trade and is generally considered to be of superior quality.

The best grade of Dalmatian Sage Oil contains not less than 50% of ketones, calculated as thujone. The specifications which follow have been written for oils of this quality.

Botanical Nomenclature

Salvia officinalis, L.

Preparation

Obtained by steam distillation of the partially dried leaves.

Physical & Chemical Constants

Color and Appearance: A yellowish or greenish-yellow liquid having a warm camphoraceous and thujone-like odor and flavor.

Specific Gravity at 25°/25°C: 0.903—0.925.

Optical Rotation: $+2^\circ$ to $+29^\circ$.

Refractive Index at 20°C: 1.4570—1.4690.

Saponification Value: 6 to 20.

Proceed as directed for the determination of esters. (See A) using approximately 5.0 grams of the oil, accurately weighed. Calculate the saponification value by the following formula:

$$S.V. = \frac{A \times 28.05}{B}$$

Where A is the number of cc. of 0.5 N alcoholic potassium hydroxide solution consumed in the saponification and B is the weight (in grams) of sample used.

Ester Value after Acetylation: 25 to 60.

Proceed as directed for the determination of total alcohols (See B) using approximately 2.5 grams of the acetylated oil for the subsequent saponification. Calculate the ester value after acetylation by the following formula:

$$E.V.A.A. = \frac{A \times 28.05}{B}$$

Where A is the number of cc. of 0.5 N alcoholic potassium hydroxide solution consumed in the saponification of the acetylated oil, and B is the weight (in grams) of the sample of acetylated oil used.

Ketone Content: Not less than 50%, calculated as thujone.

Proceed as directed for the determination of aldehydes and ketones. (See Determinations E.O.A. 1D) using approximately 1 gram of the oil accurately weighed. Calculate the ketone content, as thujone, by the following formula:

$$\text{Percentage of Thujone} = \frac{A \times 7.61}{B}$$

Where A is the difference in cc. of the 0.5 N hydrochloric acid required in titrating the blank and in titrating the determination, and B is the weight (in grams) of sample used.

Solubility in Alcohol: Soluble in 1 volume of 80% alcohol.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Practically insoluble.

Mineral Oil: Soluble, although frequently the solutions are opalescent.

Propylene Glycol: Slightly soluble.

Stability:

Relatively stable to dilute alkali and weak organic acids.

Containers

Should be shipped in glass or tin-lined containers. Good quality galvanized containers are suitable when long storage is not contemplated.

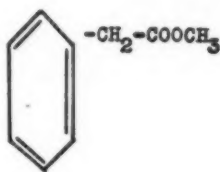
Storage

Store preferably in tight, full containers, in a cool place protected from light.

Specifications and Standards METHYL PHENYL ACETATE

$C_9H_{10}O_2$

Mol. Wt. 150.17



The methyl ester of phenylacetic acid has not been found to occur naturally in volatile oils. The free acid and other esters of phenylacetic acid have been found in a limited number of essential oils.

As a general rule, the simple esters of phenylacetic acid have pronounced honey-like odors and are used for both flavor and odor effects. The free acid and lower esters are also used extensively for syntheses in the pharmaceutical industry.

Preparation

By methanolic esterification of the corresponding acid or nitrile.

Physical & Chemical Constants

Color and Appearance: Colorless or nearly colorless liquid having an intense odor suggestive of honey.

Specific Gravity at 25°/25°C.: 1.061—1.066.

Refractive Index at 20°C.: 1.5050—1.5090.

Halogens: Negative. Proceed as directed for the determination of chlorinated compounds. (See G)

Acid Value: Maximum 1.

Proceed as directed for the determination of acid value. (See E)

Purity: Minimum 98% as $C_9H_{10}O_2$.

Proceed as directed for the determination of esters using approximately 1.0

gm. sample accurately weighed. (See A)

The number of cc. of half-normal potassium hydroxide solution consumed in the saponification, multiplied by 0.07509, indicates the number of grams of ester calculated as Methyl Phenyl Acetate in the sample taken for assay.

Solubility in Alcohol: Soluble in 6 volumes of 60% alcohol.

Descriptive Characteristics

Solubility:

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Insoluble.

Fixed Oils: Soluble in all proportions in most fixed and volatile oils.

Alcohol: Soluble in all proportions.

Propylene Glycol: Insoluble.

Water: Insoluble.

Glycerine: Insoluble.

Stability:

Alkali: Unstable in the presence of alkaline materials due to saponification.

Acid: Moderately stable to organic acids and dilute mineral acids.

Containers

Can be shipped in glass, aluminum, tin-lined or steel containers. Good quality galvanized or lacquer lined containers are also suitable provided long storage is not contemplated.

Storage

Store preferably in a cool dry place protected from light.

Specifications and Standards for

METHYL CINNAMATE

$C_{10}H_{10}O_2$

Mol. Wt.: 162.18

Preparation

Methyl Cinnamate is usually prepared by the esterification of Cinnamic Acid.

Physical & Chemical Constants

Color, Odor and Appearance: White to slightly yellow solid, with a fruity balsamic odor.

Congealing Point: Not less than 33.8°.

Proceed as directed for the determination of Congealing Points (See No. 1-H).

Ester Content: Not less than 98%.

Assay: Proceed as directed for the determination of esters, using approximately 1.0 gram of sample accurately weighed. (See No. 1-A.) The number of cc. of half normal potassium hydroxide solution consumed in the saponification, multiplied by 0.0811, indicates the number of grams of ester, calculated as Methyl Cinnamate, in the sample taken for assay.

Acid Value: Not more than 2.

Assay: Proceed as directed for the determination of Acid Value. (See No. 1-E.)

Chlorinated Compounds: Negative.

Proceed as directed for the determination of chlorinated compounds using a

50% solution in halogen free methanol. (See No. 1-G.)

Solubility in Alcohol: Clearly soluble in 4 and more volumes of 80% alcohol.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Insoluble.

Mineral Oil: Soluble.

Propylene Glycol: Soluble.

Stability:

Alkali: Unstable in the presence of alkaline materials because of tendency to saponify.

Acids: Moderately stable to organic acids and dilute mineral acids.

Containers

May be shipped in glass, aluminum or tin-lined containers.

Storage

Store in tight, full containers in a cool place, protected from light. This material may partly polymerize on prolonged standing and/or repeated melting with a corresponding drop in congealing point and a tendency to become opalescent.

Specifications and Standards for IONONES

$C_{15}H_{20}O$

Mol. Wt.: 192.29

ALPHA: Alpha-cyclocitrylidenacetone. 4-(2,6,6-trimethyl-2-cyclohexene)-3-buten-2-one.

BETA: Beta-cyclocitrylidenacetone. 4-(2,6,6-trimethyl-1-cyclohexene)-3-buten-2-one.

Preparation

Ionones are prepared by condensing citral with acetone to form a pseudo compound which is then cyclized by acid type reagents. The particular cyclizing agent used determines the proportion of alpha and beta isomers. The material thus obtained is, in general, one of the commercial types discussed below. The pure ionones can be isolated from them by further processing. (See Note 1).

Physical & Chemical Constants

I. ALPHA IONONE, PURE

Color, Odor and Appearance: Colorless to pale yellow liquid of noticeably woody violet odor.

Specific Gravity at 25°/25° C.: 0.927 to 0.933.

((Temp. Correction Factor from n_D^{20}/n_D^{25} C.: 0.0005 per °C.)

Refractive Index at 20° C.: 1.4970 to 1.5020.

Ketone Content: Not less than 99%.

Notes

NOTE 1. The coincidence in any sample of a specific gravity value which approaches the lower limit of a given specification with a refractive index value approaching the upper limit is cause for suspecting the presence of pseudo ionone.

(Turn to Page 276)



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1952 BLUE BOOK

CSMA Aerosol Test Method

Official Specification and Standard Aerosol Test Method for Flying Insects of The Chemical Specialties Manufacturers Association

EARLY in the development period of liquefied gas aerosols, starting in 1942 and especially following their appearance on the civilian market on a large scale in 1946, the need for a common method of biologically assaying aerosols became apparent. The literature records several testing techniques (among them 1, 2, 3, 4 and 5) employed by various investigators, but the necessary cooperative tests leading to the development of an official method were not initiated until 1947. The first series of cooperative aerosol tests among industrial and federal laboratories was organized and conducted in 1947 under the direction of the C.S.M.A. Aerosol Committee (6). The first series of tests employed a standard formulation in a standard dispenser at three dosage levels by the method in current usage in the cooperator's laboratory. Employing the results of the first cooperative test as a basis, a second series of cooperative tests was designed and conducted under the direction of the C.S.M.A.'s Insecticide Scientific Committee. In this second series of tests, made during the period May to October, 1948, four conventional low pressure aerosol formulations packaged in a standard dispenser were tested by nine co-operating laboratories. In these tests (7), the use of free flying flies, a standard dosage and a standard testing technique were employed. The method here presented is based on the outcome of both the first and second series of cooperative tests and, insofar as practical, follows the Official Peet-Grady (8) Test Procedure (both large and small group). This technique for testing aerosols should be regarded only as a practical test method (not a research method) designed for the comparison of

formulations in the dispensers in which they will be employed by the consumer. It is restricted at present for use against house flies, although it is felt that with modifications in dosage the general procedure would be satisfactory for other flying insects. Further cooperative tests will be necessary before the method can be adopted in final form.

II. Apparatus

A. Reference Insecticide.

The reference insecticide shall be the Tentative Official Test Aerosol (TOTA) prepared by the C.S.-M.A., Inc. The TOTA must be dispensed from the container in which it is supplied with particular care being taken that the TOTA dispenser employed meets the specifications designated on its label.

B. Dispenser for Experimental Aerosol.

No restriction is made on the dispenser employed in connection with the experimental aerosol formulation. However, it should be noted that the test results apply only to the experimental formulation as dispensed from the particular unit employed. In reporting results, the dispenser used with the experimental aerosol shall be specified.

C. Test Insect.

The test insect shall be the adult house fly (*Musca domestica*, L.) reared from a strain mixed under the supervision of the C.S.M.A. Healthy test groups having an average age of four days are to be used and individual flies in the test groups shall be not less than three nor more than six days old at the time of testing. The strain shall be of such susceptibility that the Official Test Insecticide (OTI) will cause a 24-hour mortality of 30 to 55 per cent and with approximately 95 per cent of the flies paralyzed at ten minutes

following spray application by the Peet-Grady method.

D. Fly Cages.

Cages of any convenient type may be used if they provide at least one cubic inch of space per fly and have at least two sides and the top screened. It is suggested that the base be square in shape to provide maximum floor space. The floor of the cage is preferably detachable to facilitate cleaning and inserting a paper floor covering. The cages are constructed of wood or other suitable material and fly wire screening, and are fitted with a sleeve opening, rubber membrane, or a door.

E. Rearing Room.

This room may be of any convenient size constructed so as to be free from strong drafts, and maintained at a temperature of 82 ± 2 degrees Fahrenheit and relative humidity of 50 ± 5 per cent. It should be separate from the testing room in order to eliminate the possibility of traces of insecticide coming in contact with the test insects. Ventilation should be provided to reduce odors and gases from fermenting media.

F. Testing Room.

This room may be of any convenient size, capable of holding the aerosol test chamber (Peet-Grady Chamber or large chamber) and permitting adequate additional space for the operator to handle the test efficiently. While conducting tests, this room shall be maintained at a temperature of 75 to 85 degrees F. It is suggested that the relative humidity be held between 40 and 70 per cent. Since the exhaust fan of the chamber will move relatively large quantities of air, the temperature of the air entering this room should be approximately that specified above.

G. Aerosol Test Chamber.

The test chamber shall be a Peet-Grady Chamber as specified in the Peet-Grady Method, or a larger chamber meeting the general specifications of the Peet-Grady Chamber. In the case of larger chambers, it is recommended that the dimensions be such as to approximate a normal room.

H. Exhaust Fan.

An exhaust fan moving not less than 1000 cubic feet of air per minute through the Peet-Grady Chamber, or a fan of proportionately larger capacity for testing chambers larger than the Peet-Grady Chamber shall be used to ventilate the chamber after each test. It shall be arranged with adequate piping to exhaust the chamber vapors outside of the building.

I. Insecticide Paper.

Unsize, nonglazed, absorbent paper, such as brown kraft or gray bogus, shall be used to cover the chamber floor. No special weight is specified although 60 to 80-lb. gray bogus paper has been found excellent. In certain laboratories testing chamber ceilings and walls have been covered with cardboard, kraft paper, or other material suitably arranged for easy renewal to reduce chamber cleaning difficulties.

J. Apparatus for Picking Up Flies.

Any convenient means of picking up the paralyzed flies without injuring or appreciably disturbing them may be used. If a vacuum device is used, it must produce gentle suction, have a sufficiently large receptacle to prevent crowding of the flies, and be cleaned after each test with the same materials used in cleaning the chamber.

In laboratories in which it is felt desirable to capture unparalyzed flies at the end of the test exposure period, suitable means of capturing the flies without injury in a clean apparatus shall be employed.

III. Procedure

A. Rearing and Handling Flies.

In this procedure, eggs are transferred to medium suitable for

the development of larvae, the pupae are collected from the medium and placed inside of cages, and the adult flies emerge and remain in these cages until the day of testing.

(a) *Larval medium*: The preferred containers are cylindrical glass battery jars approximately 6 in. in diameter and 9 in. high. For one jar, mix 340 gm. (12 oz.) standard dry larval medium, (1) with approximately 750 cc. of an aqueous suspension containing 15 gm. moist cake yeast and 10 cc. non-diatomaceous Diamalt, (2). Mix thoroughly until a loose fluffy medium is obtained, transfer it to the battery jar without packing, cover with cloth and set in the insectary. The amount of suspension required for best rearing results will need to be determined in each laboratory and it may be varied in order to prevent mold growth. It is suggested the medium be prepared in the late afternoon of the day before egg collection.

(1) Mixed quarterly according to C.S.M.A. specifications by the Ralston Purina Co., St. Louis, Mo., on the basis of orders received by the first of January, April, July and October, in 50 lb. bags. Terms—pay on receipt of invoice.

(2) Standard Brands, Inc. products. These can be obtained from local distributors in most cases.

(b) *Eggs*: Eggs are collected for a period not longer than 16 hours from food dishes or other oviposition media in cages containing mature flies not more than 8 days old. It is suggested that fresh oviposition medium be placed in fly cages in the late afternoon and eggs be collected early on the following morning. After collecting the eggs they must be measured and seeded without delay. Wash the eggs in tap water at room temperature and measure 2000 eggs as accurately as possible. This may be done by allowing the eggs to settle in a calibrated pipette or graduate (0.1 cc. settled eggs contains about 700) or the eggs can be filtered and measured in calibrated pits or cells. Use 10 cc. tap water to measure and to scatter the eggs in a ½ in. deep

pit located in the center of the jar of larval medium. Cover the eggs with loose medium, replace the cloth covers on the jars, and set jars in the insectary so that at least 1.5 in. separates each jar to permit free air circulation. The maximum temperature in the jar (about 3 days later) must not exceed 130°F. Under normal conditions, more than 85 per cent of the eggs should hatch within 36 hours of the time they are laid.

(c) *Pupae*: Mature larvae migrate to the top portion of the medium and normally all larvae will have pupated by the seventh day after seeding eggs. When this occurs, the portion of medium containing pupae is loosened, poured into a shallow tray, and air dried at room temperature. An electric fan may be used to hasten drying. Pupae may be separated from the dry medium by sprinkling the pupae-medium mixture on an inclined tray or chute set in front of an air blast such as that from an electric fan. The pupae must be handled gently and as little as possible in order to avoid injury. Any method that permits at least 95 per cent of flies to emerge is considered satisfactory.

All of the pupae maturing on a given day are combined into one lot, mixed, and measured into test units. Each group is placed in a shallow dish which is, in turn, placed in a cage which provides at least 1 cu. in. of space per pupa. If the large group procedure is used the test unit consists of approximately 500 pupae. If the small group procedure is used, more than 500 pupae are placed in stock cages and adult flies are sampled prior to testing.

(d) *Adult Flies*: The food for adult flies shall consist of 5 per cent spray dried, non-fat milk solids and 2 per cent granulated sugar thoroughly dispersed in water. A 40 per cent formalin solution may be added to the food at the rate of 1/1500 to delay souring. Each cage is supplied daily with a dish containing at least 15 cc. of a 50 per cent dilution of milk with water for each 100 flies and so prepared as to prevent the flies from drowning. Satis-

factory food must be available to the flies at all times. The series of test units is kept until the second day of oviposition (usually the 14th day after the culture was prepared) when they are ready for testing. Under normal rearing conditions, at least 80 adult flies should be obtained from each 100 eggs seeded.

B. Testing Flies.

Before a fly aerosol test is started, the aerosol test chamber must be clean and have clean paper on the floor, all ports and openings must be closed, and the temperature must be $82 \pm 2^\circ$ F., and all windows must be equally shaded. In chambers where walls and ceilings are covered with paper or other material, contamination, if present, must be at sufficiently low levels not to influence test results. Contamination by many compounds may be detected by holding flies with food overnight in the cleaned chamber. The chamber is considered contaminated if more than 8 per cent of the flies are either paralyzed in 30 minutes or are dead in the morning. It is recommended that laboratories make a standard practice of taking contamination observations, employing a normal fly test group, following each day's testing. In both the large and small group procedures, only flies which are capable of flying may be liberated into the aerosol test chamber. In the large group

procedure, all flies in one cage are used in a single test; but in the small group method, a sample of 100 ± 5 flies is used in each test. Samples may be taken by liberating the flies directly into the chamber and continuing until about 10 per cent of flies remain in the stock cage. These are discarded. Samples may be taken also by discarding the first 100 flies and then counting 50 flies into each of a series of small cages. One hundred flies are counted into the last cage and, working backward, 50 flies are added to each. Flies remaining in the stock cage are discarded. The order of spray treatments must be randomized.

After liberating the flies in the chamber, and with the bomb at $82 \pm 2^\circ$ F., a total of 3.0 grams ± 0.5 gram of aerosol mixture per 1000 cubic feet shall be applied in a continuous flow. In Peet-Grady Chambers, this is 0.648 ± 0.108 grams. The dispenser nozzle may be oscillated slowly to effect uniform distribution of the aerosol mist within the test chamber. The mist shall not be directed onto chamber wall and ceiling surfaces. The test dispenser shall be weighed before and after the liberation of the aerosol mixture and the actual weight of material introduced shall be recorded. The chamber is closed at a constant temperature in the range of $82 \pm 2^\circ$ F. for 15 minutes from the time the aerosol mist is introduced.

Observations shall be made as to the number of flies "down" (paralyzed) at 5 and 10 minutes following insecticide application. These observations are especially important because with conventional formulations practically all flies "down" at 15 minutes fail to recover during the 24-hour observation period. At the end of 15 minutes the ports are opened and the chamber is ventilated by means of the exhaust fan while the flies are collected.

The "down" flies are picked up and transferred immediately to clean cages meeting the specifications of Section II, Paragraph D. These flies may be counted when they are picked up or later, depending upon which time is more convenient. During the subsequent 24-hour recovery period, the cage is placed in the rearing room and supplied with an adequate quantity of a 5 per cent sugar solution, arranged so that the top of the dish is not more than $\frac{3}{4}$ inch above the floor of the cage and the flies cannot drown in it. A gauze-wrapped ball of cotton saturated with 5 per cent sugar solution is also satisfactory.

The "up" (unparalyzed) flies in the chamber at the end of the 15-minute exposure period must be counted and either discarded or captured.

After a test is completed all toxic residues must be removed from
(Turn to Page 275)

(Label for Tentative Official Test Aerosol)

Front Panel

C.S.M.A.
Seal

1949-1950
TENTATIVE OFFICIAL
TEST AEROSOL

Household Type Insecticide Aerosol
Not To Be Used After January 1, 1953

Chemical Specialties
Manufacturers Association, Inc.

110 East 42nd Street
New York 17, N. Y.

(Label for Tentative Official Test Aerosol)

Back Panel

METHOD OF USING THE TENTATIVE OFFICIAL TEST AEROSOL

Follow the procedure in accordance with the C.S.-M.A. Tentative Official Aerosol Test Method for Flying Insects.

Store at $50-90^\circ$ F.

IMPORTANT — Read carefully the accompanying printed enclosure. Results are not valid unless they conform to these prescribed conditions.

For official use, the T.O.T.A. dispenser must be undamaged, show no signs of leakage, and have a delivery rate of 8 to 15 grams per 10 seconds at $82 \pm 2^\circ$ F. The dispenser must be discarded when 80 per cent of its original contents have been used or when the dispenser weighs less than 160 grams.

Open exchange...

EXCHANGE of views in open meeting on common industry problems has aided many a manufacturer in the solution of his own individual problems.

Active participation in the affairs of your trade association opens a path toward a quicker and easier solution of these problems.

For over 37 years, the benefits to members of the Chemical Specialties Manufacturers Association through valuable meeting contacts and discussion of common problems have been many. And all are over and above the various direct services to members from CSMA headquarters, notably the prompt and informative bulletin service on important subjects.

If you are in the field of disinfectants, deodorants, insecticides, floor waxes, polishes, soap and detergent specialties, aerosol products, or other chemical specialties, this is a suggestion to look into the advantages of CSMA membership to your firm.



CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC.

110 East 42nd Street

Clarence L. Weirich, President

New York 17, N. Y.

Melvin Fuld, 1st Vice-Pres.

T. Carter Parkinson, 2nd Vice-Pres.

Peter C. Reilly, Treasurer

H. W. Hamilton, Secretary

The Peet-Grady Method

Official Method of the Chemical Specialties
Manufacturers Association¹ for Evaluating
Liquid Household Insecticides, 1952 Revision

THE Peet-Grady Method was adopted as an official test in 1932, and has since been improved in certain details, all improvements have been officially accepted after thorough investigation by the CSMA Insecticide Scientific Committee. Inquiries regarding the method should be addressed to the chairman of this Committee. This method of test is a means of determining the relative efficiency of contact insecticides dissolved in fly spray base oils suitable for household and industrial use. The method does not apply to cattle sprays having viscosities materially higher than those of fly spray base oils. As a biological test it is subject to variations which accompany the reaction of living organisms and should be employed under the supervision of a person familiar with the biological testing of insecticides. In order to measure with reasonable tolerance the relative effectiveness of different insecticides, the test is designed to be used in conjunction with the "Official Test Insecticide" as the basis of comparison.

Two methods, or procedures, are permitted. The small group method is substantially the same as outlined at the time the test was adopted in 1932 while the large group method was adopted officially in 1938. Both methods are being used extensively, and if correctly employed, evaluation by either test may be expected to be in reasonable agreement.

¹ Formerly the National Association of Insecticide and Disinfectant Manufacturers, Inc.

II. APPARATUS

A. Reference Insecticide:

The reference insecticide shall be the current Official Test Insecticide (OTI) prepared and sold by the CSMA, 110 E. 42nd Street, New York 17, New York. The OTI is carefully standardized by both biological and chemical analysis and it must not be diluted or changed in any manner.

B. Atomizer: The Special Atomizer No. 5004, constructed by the DeVilbiss Co., Toledo, O., must be used, preferably with the DeVilbiss No. 631 cut off. This atomizer shall be operated with air free of contaminants and maintained at a constant pressure of 12.5 ± 0.5 pounds per sq. in. measured by a gage of not more than 30 pounds capacity or a manometer. The atomizer shall deliver 12 cc. of OTI in 24 seconds (tolerance ± 1 second) and this should be checked frequently. Atomizers failing to meet this test should be repaired by the manufacturer or replaced.

C. Test Insect: The test insect shall be the adult house fly (*Musca domestica* L.) reared from a strain mixed under the supervision of the CSMA. Flies in test groups shall be not less than 3 nor more than 6 days old at the time of testing, and must meet the CONDITIONS FOR OFFICIAL EVALUATION, Section IV.

D. Fly Cages: Cages of any convenient type may be used if they provide at least 1 cubic inch of space per fly and at least 2 sides and the

top are screened. The floor of the cage preferably is detachable, to facilitate cleaning and inserting a paper floor covering. The cages are constructed of wood or other suitable material and fly wire screening, and are fitted with a sleeve opening, rubber membrane, or a door.

E. Rearing Room: This room may be of any convenient size constructed so as to be free from strong drafts, and maintained at a temperature of 82 ± 2 degrees Fahrenheit and relative humidity of 50 ± 5 percent. It should be separate from the testing room in order to eliminate the possibility of traces of insecticide coming in contact with the test insects. Ventilation should be provided to reduce odors and gases from fermenting media.

F. Testing Room: This room may be of any convenient size capable of holding the standard Peet-Grady Chamber and permitting adequate additional space for the operator to handle the test efficiently. While conducting tests, this room shall be maintained at a temperature of 75 to 85 degrees Fahrenheit. It is suggested that relative humidity be held between 40 and 70 percent. Since the exhaust fan of the chamber will move relatively large quantities of air, the temperature of the air entering this room should be approximately that specified above.

G. Peet-Grady Test Chamber: The Test Chamber shall be rigidly constructed of wood, metal, or other suitable material. The inner surface shall be smooth, impervious

to the usual household type of insecticide, and as free from cracks, projections, ledges, etc., as possible. The chamber shall be a 6-ft. cube by internal measurements, with a tolerance of plus or minus 1 in. for any dimension. One wall shall contain a tight-fitting door large enough for a man to enter conveniently, with the interior side flush with the wall when closed. One or more of the walls, or the ceiling, shall contain an observation window, preferably on two opposite walls. Illumination is provided by means of a glass window in the ceiling, above which is placed an electric light of such intensity as to permit flies to be observed easily. An opening covered with 10 or 12-mesh wire screen shall be connected to an exhaust fan duct and the size and the location of this opening in relation to ventilation openings in the wall must be such that thorough ventilation of the chamber is obtained. Preferably, the exhaust opening should be 1 sq. ft. or larger and located in or near the ceiling. Air inlet openings may be ports approximately 6 x 6 in. in size, covered with screen on the inside and provided with tight fitting hinged covers on the outside. Four ports located near the 4 lower corners, or 8 ports located near both the 4 upper and 4 lower corners are satisfactory, but the ventilation ports should not be on the same level as the exhaust port. The entrance door may be used alone or in conjunction with the ventilation ports if a screen door is provided and thorough ventilation of the chamber is obtained. If the temperature of the air used to ventilate the chamber is lower than 80° F., heaters may be used to obtain the temperature of $82 \pm 2^\circ$ F. required during the test period. Such heaters must be removed before a test is started. Openings shall be provided for the introduction of the insecticide; these must be so constructed and so located that uniform distribution of the spray is effected without undue ventilation of the chamber. These openings may be round 1 in. holes located not less

than 6 in. or more than 12 in. from the ceiling and 18 in. from the nearest corner on each wall, or a single hole may be provided in the center of each wall 6 to 12 inches from ceiling.

H. Exhaust Fan: An exhaust fan moving not less than 1,000 cu. ft. of air through the chamber per min. shall be used to ventilate the chamber after each test. It shall be arranged with adequate piping to exhaust the chamber vapors outside of the building.

I. Insecticide Paper: Unsized, non-glazed absorbent paper, such as brown kraft or gray bogus, shall be used to cover the chamber floor. Two overlapping sheets of 36-40 in. width or one sheet of 6 ft. width may be employed. No special weight is specified although 60-80 lb. gray bogus paper has been found excellent.

J. Apparatus for Picking Up Flies: Any convenient means of picking up the paralyzed flies without injuring or appreciably disturbing them may be used. If a vacuum device is used, it must produce gentle suction, have a sufficiently large receptacle to prevent crowding of the flies, and it shall be cleaned after each test with the same materials used in cleaning the chamber.

III. PROCEDURE

A. Rearing and Handling Flies: In this procedure, eggs are transferred to medium suitable for the development of larvae, the pupae are collected from the medium and placed inside of cages, and the adult flies emerge and remain in these cages until the day of testing. A culture is defined as all adults resulting from the seeding of eggs collected at one time on a given date.

Larval medium: The preferred containers are cylindrical glass battery jars approximately 6 in. in diameter and 9 in. high. For one jar, mix 340 gm. (12 oz.) standard dry larval medium (1) with approxi-

mately 750 cc. of an aqueous suspension containing 15 gm. moist cake yeast and 10 cc. non-diatatic Diamalt, (2). Mix thoroughly until a loose, fluffy medium is obtained, transfer it to the battery jar without packing, cover with cloth and set in the insectary. The amount of suspension required for best rearing results will need be determined in each laboratory and it may be varied in order to prevent mold growth. It is suggested the medium be prepared in the late afternoon of the day before egg collection.

Eggs: Eggs are collected for a period not longer than 16 hours from food dishes or other oviposition media in cages containing mature flies not more than 8 days old. It is suggested that fresh oviposition medium be placed in fly cages in the late afternoon and eggs be collected early on the following morning. After collecting the eggs they must be measured and seeded without delay. Wash all the eggs together in tap water at room temperature and measure 2000 eggs as accurately as possible. This may be done by allowing the eggs to settle in a calibrated pipette or graduate (0.1 cc. settled eggs contains about 700) or the eggs can be filtered and measured in calibrated pits or cells. Use 10 cc. tap water to measure and to scatter the eggs in a pit or trench $\frac{1}{2}$ in. deep and located in the center of the jar of larval medium. Cover the eggs with loose medium, replace the cloth covers on the jars, and set jars in the insectary so that at least 1.5 in. separates each jar to permit free air circulation. The maximum temperature in the jar (about 3 days later) must not exceed 130°F. Under normal conditions more than 85 per cent of the eggs should hatch within 36 hours of the time they are laid.

Pupae: Mature larvae migrate to the top portion of the medium and normally all larvae will have pupated by the seventh day after seeding eggs. When this occurs, the portion of medium containing pupae may be loosened, poured into

(1) Mixed according to CSMA specifications by the Ralston Purina Co., St. Louis, Mo.

(2) Standard Brands Inc. products. These can be obtained from local distributors in most cases.

a shallow tray, and air dried at room temperature. An electric fan may be used to hasten drying. Pupae may be separated from the dry medium by sprinkling the pupae-medium mixture on an inclined tray or chute set in front of an air blast such as that from an electric fan. The pupae must be handled gently and as little as possible in order to avoid injury. Any method that permits at least 95 per cent of flies to emerge is considered satisfactory.

All of the pupae maturing on a given day are combined into one lot, mixed, and measured into test units. Each group is placed in a shallow dish which is, in turn, placed in a cage which provides at least 1 cu. in. of space per pupa. If the large group procedure is used the test unit consists of approximately 500 pupae. If the small group procedure is used, more than 500 pupae are placed in stock cages and adult flies are sampled prior to testing. Under normal rearing conditions, at least 80 adult flies should be obtained from each 100 eggs seeded.

Adult Fly Food: The food for adult flies shall consist of 5 per cent spray dried, non-fat milk solids and 2 per cent granulated sugar thoroughly dispersed in water. Roller dried or caked milk solids settle out of suspension within a few hours and are unsuitable as food. A 40 per cent formalin solution may be added to the food at the rate of 1/1500 to delay souring. Each cage is supplied daily with a dish containing at least 15 ml. food for each 100 flies, and so prepared as to prevent the flies from drowning. Satisfactory food must be available to the flies at all times.

B. Testing Flies: Before a fly spray test is started, the Peet-Grady chamber must be clean and have clean paper on the floor, all ports and openings must be closed, the temperature must be $82 \pm 2^\circ\text{F}$., and all windows must be shaded equally. In both procedures, only flies which are capable of flying may be liberated into the Peet-Grady chamber. In the large group pro-

cedure all flies in one cage are used in a single test, but in the small group method a sample of 100 ± 5 flies is used in each test. Samples may be taken by liberating the flies directly into the chamber and continuing until about 10 per cent of flies remain in the stock cage. These are discarded. The order of spray treatments must be randomized as discussed in Section IV, paragraph 6.

Immediately after liberating the flies in the chamber, a total of 12 cc. of insecticide shall be sprayed into the chamber by discharging equal portions through each hole. The nozzle of the atomizer shall be oscillated slowly horizontally to avoid spraying walls and ceilings and to effect uniform spray distribution. This procedure shall be completed within one minute from the time the spraying was started and the chamber must remain closed at a constant temperature in the range of $82 \pm 2^\circ\text{F}$. for a total of 10 min. At the end of this period the ports are opened and the chamber is ventilated by means of the exhaust fan while the flies are collected.

The paralyzed flies are picked up and transferred immediately to clean cages meeting the specifications of Section II, paragraph D. These flies may be counted when they are picked up or later, depending upon which time is most convenient. During the subsequent 24-hr. recovery period, the cage is placed in the rearing room and supplied with an adequate quantity of a 5 per cent sugar solution, arranged so that the top of the dish is not more than $\frac{3}{4}$ inch above the floor of the cage and flies cannot drown in it. A gauze-wrapped ball of cotton saturated with 5 per cent sugar solution also is satisfactory.

The unparalyzed flies in the chamber at the end of the 10-min. exposure period must be counted and discarded.

After a test is completed, all toxic residues must be removed from the chamber. The paper on the floor must be renewed and the inside

walls and ceiling must be cleaned thoroughly. Wiping with a clean cloth saturated with alcohol containing 10 per cent acetone or washing with soap and water will remove a number of toxic residues. However, special cleaning precautions may be required after tests with certain chemical compounds in order to remove their toxic residues. Contamination by many compounds may be detected by holding flies with food overnight in the cleaned chamber. The chamber is considered contaminated if more than 8 per cent of flies are either paralyzed in 30 minutes or are dead in the morning.

C. Assembling the Data:

The number of unparalyzed flies must be counted and recorded at the end of the 10-min. exposure period. The dead flies are counted 24 hours (± 1 hr.) later, preferably by removing them from the recovery cage. Only flies that show no sign of life upon being touched may be counted as dead. If paralyzed flies were counted as they were collected, the sum of paralyzed and unparalyzed flies yields the total flies in the test. If paralyzed flies were not counted as collected, the recovered flies are killed by placing the cage in an oven at 170°F . for a few minutes, after which they are counted. The sum of recovered and dead flies yields the paralyzed flies and this sum added to the unparalyzed flies yields the total flies used in the test. The mortality is the per cent dead of total flies and the knockdown is the per cent paralyzed of total flies.

IV. CONDITIONS FOR OFFICIAL EVALUATION

1. The tests shall be conducted in accordance with the procedure previously described and no official Peet-Grady rating may be assigned unless the tests meet all requirements.
2. At least 2 cultures of flies shall be used in making an official evaluation.
3. Cages showing a combined mortality and crippling greater than

8 per cent on the day of test shall not be used.

4. An unknown insecticide to be officially rated shall have a knockdown percentage equal to that of the OTI with a tolerance of minus 2.
5. The kill by the OTI shall fall between 30 and 55 per cent in all tests. The toxicity of an unknown spray shall be reported by a grade letter, obtained by subtracting the average kill by the OTI from the average kill by the unknown spray and comparing this result with the following figures:

Grade Letter	Kill Difference
AA	: +16 or greater
A	: +6 to +15
B	: +5 to -5

6. In the small group procedure no more than 2 unknown samples may be tested in conjunction with one OTI in any one series. Ten tests are run on the OTI and on each of the unknowns in parallel; that is, test each spray the same number of times on flies of the same culture and test all sprays the same number of times on any one day. The samples of a series must be randomized in the order of testing. For example, number the samples and the OTI, and test them in the order 1, 2, 3; 2, 1, 3; 3, 2, 1, etc., until each has been tested ten times. After the mortality data are obtained, calculate the average kills and determine the difference between that of the unknowns and that of the OTI. In order for these differences to be valid, the standard error of the mean difference between the average OTI kill and the average unknown kill must be less than 3. If it is 3 or greater, the test results were too variable and to make the results valid, additional paired tests must be run to reduce the figure to a value less than 3. The example in Table I illustrates the arrangement of test data and calculations described in the preceding paragraphs. When two unknown samples and the OTI are tested in series, the first table

should consist of differences between Sample No. 1 and the OTI, the second table should show differences between Sample 2 and the OTI.

1.14 is less than 3, thus indicating the test has been properly conducted. The letter n (in formula above) denotes the number of paired tests. This number is always 10 except when it is necessary to run additional tests to reduce the standard error of the mean difference to 3 or less.

The percentage kill of Sample 1 minus the percentage kill of OTI

is +4; therefore, Sample 1 is a "B" grade insecticide.

7. In the Large Group procedure the evaluation is carried out as follows:

The evaluation is based on the difference in mortality of the OTI and the unknown as determined by a minimum of 4 tests. The order of testing shall be random and replicated OTI tests on any culture shall agree within 10 points. Table II illustrates one arrangement of testing, the computation of the test results, and the grading of the sprays.

TABLE I. Small Group Method

Pair	Culture	Date	% Dead		Difference ^a	Deviation ^b	Deviation Squared
			Sample 1	OTI			
1	C	3-8	58	50	+8	+4	16
2	C	8	62	55	+7	+3	9
3	C	8	60	54	+6	+2	4
4	C	8	52	52	+0	-4	16
5	C	8	49	46	+3	-1	1
6	E	9	61	54	+7	+3	9
7	E	9	46	49	-3	-7	49
8	E	9	53	51	+2	-2	4
9	E	9	57	54	+3	-1	1
10	E	9	53	46	+7	+3	9
			55.1M	51.1M	+4 MD	0	118 Sum d ^b

^a Sample 1 kill minus OTI kill.

^b Deviation from the mean difference (MD).

The mean difference (MD) between Sample 1 kill and the OTI kill is 4.0.

$$\text{The standard error of MD} = \sqrt{\frac{\text{Sum } d^b}{n-1}} = \sqrt{\frac{118}{9}} = 1.14$$

TABLE II. Large Group Method

Cage No.	CULTURE E Nov. 21		CULTURE F Nov. 23	
	Sample	% Dead	Sample	% Dead
1	OTI	43	2	69
2	1	44	3	65
3	3	57	OTI	54
4	2	63	3	58
5	3	52	1	45
6	OTI	47	2	77
7	1	39	1	54
8	2	71	OTI	46

Sample	Mortalities	Average	Rating	Grade
OTI	43, 47, 54, 46	47.5		
1	44, 39, 45, 54	45.5	- 2.0	B
2	63, 71, 69, 77	70.0	+22.5	AA
3	57, 52, 65, 58	58.0	+10.5	A

C S M A Textile Resistance Test

Tentative Methods of Test for Resistance of Textiles to Insect Pests of the Chemi- cal Specialties Manufacturers Association

Scope

1. (a) These tentative methods, of test cover biological procedures for determining the resistance to insect pests of textiles that contain wool or other susceptible fibers. The test methods described here are not concerned with the various procedures for treating textiles or with their subsequent handling, ageing, washing, cleaning, etc., but only with the biological methods to be used to measure the resistance of textiles to insect attack. The term "insect pests" shall be construed to apply to clothes moths and carpet beetles. Two procedures are covered, as follows:

(1) *Excrement Weight Method*—For use only when the tests are made with carpet beetles.

(2) *Fabric Weight Loss Method*—For use when the tests are made with the webbing clothes moth. This method may be used for tests with carpet beetles when the technique and results of this method are preferred or when comparative tests using both insects are made.

(b) The extent of damage to the test specimens shall be determined by the excrement weight method or by the fabric weight loss method, whichever is applicable.

Test Cages

2. The cage for conducting the tests may be any shallow glass

or metal flat-bottomed container of a size enough to permit the insects to be either in contact with or off the horizontally placed test specimen. It shall be well-ventilated and provided with a 60 mesh metal screen cover.

Test Insects

3. (a) Black Carpet Beetle, *Attagenus piceus* (Oliv.)—Larvae shall be used from cultures maintained as in Appendix I. Larvae shall be in the weight range of 5 to 7 mg. each. Only larvae shall be used that pass through a U. S. Standard Sieve Series No. 14 sieve and are retained on a No. 16 sieve as described in Section A 5 (c).

(b) Webbing Clothes Moth, *Tineola bisselliella* (Hum.)—Larvae shall be used from cultures maintained as described in Appendix II. Larvae shall be 25 to 27 days old as measured from the date of egg deposition to the time they are put on test. Older larvae may pupate during the test period.

(c) Furniture Carpet Beetle, *Anthrenus vorax* (Waterh.)—Larvae shall be used from cultures maintained as described in Appendix III and may be used as alternative test insects with the black carpet beetle. Larvae shall be six weeks old when put on test as measured from the time of egg deposition. The feeding propensities of the two species are similar.

(d) Other Species — Other species of fabric pests may be used for obtaining supplementary data insofar as the test methods herein described are applicable.

Test Specimens

4. (a) Fabrics — Specimens, each with 2 sq. in. area shall be cut from widely-spaced portions of the fabric.

(b) Yarns—Test specimens of each yarn shall be prepared by uniformly winding one layer of yarn on a square or rectangular piece of glazed cardboard, glass, or metal with an area of 2 sq. in. The surface of the glazed cardboard, metal or glass shall be substantially covered by the yarn.

(c) Carpets — Test specimens, each with an area of 2 sq. in., shall be cut from widely-spaced portions of the carpet. The edges of the specimens shall be secured by coating the backing yarns with cellulose nitrate dissolved in acetone. For the weight loss method specimens shall be prepared by stapling pieces of yarn removed from the specimen to pieces of glazed paper each having an area of 2 sq. in. so that the surface is covered substantially by the yarn.

(d) Control¹ Specimens for Insect Activity—Control specimens

of the standard pure, undyed, scoured wool fabric (Note 1), each having an area of 2 sq. in., shall be exposed under the same conditions as the test specimen. If the fabric or yarn to be tested has been treated with some form of insecticide for the purpose of increasing its resistance to insect pests, specimens of the same fabric or yarn in the untreated condition should be exposed for comparison, if possible.

(e) Number of Test Specimens—The number of test specimens required is given under the respective methods of test.

(f) Condition of Test Specimens—The test specimens shall be free of volatile solvents or other carriers used in the application of the treatment, and free of any solvents or auxiliary agents used in any subsequent durability test.

EXCREMENT WEIGHT METHOD

(Applicable for Tests with Black Carpet Beetle and Furniture Carpet Beetle)

Procedure

5. (a) At least four test and four control specimens shall be prepared in accordance with Section 4.

(b) Each test specimen and control specimen shall be freed of any loosely adhering dirt or dust and placed face down in a separate test cage. Ten larvae as specified in Section 3 (a) or 3 (c) shall be used for each test. The larvae shall be placed on the surface of the specimen, and the cage covered as specified in Section 2.

(c) Incubation—The cages containing the test specimens and larvae shall be held for 14 days at a temperature of 80 plus or minus 2°F. and a relative humidity of 55 plus or minus 5 per cent. Light shall be excluded.

Determination of Damage and Insect Survival

6. (a) The extent of the damage to the test specimens shall be determined by the quantity of excrement deposited.

(Note 1—The standard fabric may be purchased from the chairman, Research Committee, American Association of Textile Chemists and Colorists, Lowell Textile Inst., Lowell, Mass.)

(b) The quantity of excrement deposited during the test period shall be determined as follows:

(1) Remove and record living and dead insects. Survival counts shall be made in all cases, as they are important in demonstrating the vitality of the test larvae.

(2) Remove test specimen from cage and by alternately tapping and brushing transfer all loose material, excrement, exuviae, etc., back into the test container.

(3) Transfer contents of cage into a No. 3 Gooch crucible, and by repeated tapping of the crucible, the excrement shall be sifted through the perforations into one of a pair of matched watch glasses.

(4) The weight of excrement is determined by using an analytical balance having a minimum sensitivity of 0.2 mg. For the purpose of this test, all material that sifts through the perforations of the Gooch crucible shall be construed as excrement.

Report

7. (a) The report shall include the following information for each test specimen of the treated sample and the untreated controls:

(1) Weight of excrement in milligrams.

(2) No. of larvae alive.

(b) The test sample shall be considered satisfactorily resistant to carpet beetles if an average quantity of excrement of not over 5 mg. per specimen is deposited, provided that no single specimen shall show more than 6 mg. of excrement and that under the same conditions the controls shall show an average quantity of excrement of not less than 15 mg. per specimen.

(c) The test shall be invalid if the quantity of excrement deposited on the control specimens averages less than 15 mg. per specimen, or if less than 90 per cent of the control larvae survive.

FABRIC WEIGHT LOSS METHOD

(Applicable for Tests with Carpet Beetles and Clothes Moths)

Procedure

8. (a) Test Specimens—Two sets of at least 8 specimens each, one

set from the material to be tested and the other from the standard control fabric [Note 1 under Section 4 (d)], shall be prepared in accordance with Section 4. Four specimens of each set shall be used for feeding tests, and the other four used as humidity controls.

(b) Humidity Control Test—Four specimens from each set shall be exposed to the same test conditions as the specimens used for feeding tests except that no larvae shall be added. A change in weight of the humidity check specimens is due to change in moisture content only and shall be used to correct the weights of the feeding test specimens for moisture changes. (This method of humidity correction cannot be relied upon to correct for wide variations in humidity during the observation period.)

(c) First Weighing—The test specimens and humidity control specimens shall be freed of any loosely adhering dirt or dust and placed in the test cages under controlled humidity and temperature conditions (Section 5 (c)) for at least 48 hours before weighing. They shall be weighed under the same conditions as specified in Section 6 (b) (4). The order of weighing shall alternate between test specimen and humidity control specimen, and the same order of weighing followed at the second weighing [Section 9 (b) (3)].

(d) Incubation—Ten larvae as specified in Section 3 shall be placed on each test specimen and the test containers covered as specified in Section 2. The test cages and humidity check cages are held for 14 days as specified in Section 5 (c).

Determination of Damage and Insect Survival

9. (a) The extent of the damage to the test specimens shall be determined by the loss of weight of the test specimens caused by the feeding of the larvae.

(b) The weight loss at the end of the test period shall be determined as follows:

(1) Remove and record living and dead insects [See Section 6 (b) (1)].

(2) Specimens shall be brushed to free them of all loose material, such as excrement, webbing, cast skins, loose fibers, etc. Forceps usually are necessary to remove masses of webbing and excrement from clothes moth test specimens and containers.

(3) Second Weighing—Cleaned test specimens and control specimens and the humidity check specimens shall again be weighed in accordance with Section 8 (c), after the test samples have been reconditioned at controlled temperature and humidity for at least 24 hours after cleaning and removal of insects.

(4) Loss of Weight—Loss of weight, in milligrams, due to feeding of the test larvae, as adjusted for humidity changes, shall be calculated as follows (Note 2):

$$L = \frac{AC}{B} - D$$

where:

L = adjusted loss of weight in milligrams due to insect feeding.

A = average weight of the four test specimens before testing.

B = average weight of the four humidity check specimens before testing.

C = average weight of the four humidity check specimens after testing.

D = average weight of the four test specimens after testing.

Report

10. (a) The report shall include the following for the treated sample and the untreated control:

(1) Loss of weight in milligrams.

(2) Number of larvae alive.

(3) Number of larvae pupated.

(b) The test sample shall be considered satisfactorily resistant to the insect pests used if the average loss of weight due to feeding is not more than 8 mg., provided that un-

(Note 2—This formula is applicable regardless of whether the humidity check specimens gain or lose weight.)

der the same conditions the average loss in weight of control specimens is 30 mg. or more. No individual specimen shall show more than 10 mg. loss of weight.

(c) The test shall be invalid if the amount of feeding results in less than 30 mg. average weight loss per control specimen or less than 75 per cent of the control larvae survive.

(d) Individual weight records of test specimens and humidity checks before and after the test may be reported if desired. Humidity checks should show no more than 5 per cent variation in weight before and after the test.

Referee Test

11. In the event of dispute, a disinterested laboratory shall conduct the tests as follows:

(a)—Weight loss methods shall be used for both carpet beetles and clothes moths.

(b)—The number of test specimens shall be doubled.

(c)—All other conditions heretofore set forth shall apply.

(d)—The results of the referee test shall be final.

APPENDIX I Procedure For Rearing and Handling the Black Carpet Beetle

Scope

A1. The standardized procedure for rearing test insects is an essential part of the standard test procedure for determining resistance of fabrics to insect pests. The following procedure is to be used for rearing the black carpet beetle, *Attagenus piceus* (Oliv.).

Rearing Containers

A2. Any suitable type of container, such as mason jars, battery jars, tin cans, with screen or cloth covers, may be used for rearing the larvae of the black carpet beetle.

Rearing Medium

A3. The following rearing Medium is specified:

(a) Gaines Dog Meal — 95 parts
Powdered Brewer's Yeast—5 parts

Grind the dog meal to pass through a 24-30 mesh wire sieve and then mix with the yeast. Sterilize the mixture in open pint jars in an oven at 100° C. for 1 hour to kill any mites or mite eggs that may be present. Avoid overheating as this may affect the subsequent growth of the carpet beetle larvae.

(b) Immediately after sterilization of the food and before adding larvae to the medium, mix in 12½ ml. of distilled water for each 100 grams of medium to restore the moisture content of the food.

Insectary Rearing Conditions

A4. The carpet beetle rearing room or incubator shall have a constant temperature of 80° plus or minus 2°F. and a relative humidity of 55 plus or minus 5 per cent.

Maintenance of Cultures

A5. (a) It is possible to maintain cultures of the black carpet beetle so that larvae of testing size and age are available at all times. This can be accomplished only when over-crowding is prevented and when cultures are kept well supplied with food.

(b) The black carpet beetle completes a life cycle in 6-8 months when optimum rearing conditions are maintained. In order to secure adults of known age and size, the pupae should be collected before the emergence of the adult and placed in a separate container along with pieces of wool cloth that have been well dusted with dry brewer's yeast or sprayed with a water suspension of same. The cloth serves as a place for oviposition by the adult females which may lay as many as 130 eggs, and the yeast serves as a food supplement for the young larvae.

(c) The eggs, which hatch in from 6 to 12 days, are so fragile that the cultures may not be handled without injury until the larvae are about one month old. Allow the newly hatched insects to remain on the fabric with brewer's yeast for one month from the date when re-

moved from oviposition jars. At this time clean off all cast skins, fabric, etc., and place the insects on the rearing medium (A3). One pound of culture medium will support 1,000 larvae for 3 months, at which time the larvae should be removed by sieving and placed in fresh food. Sieves are also very useful for removing frass, dead adults, and in segregating various sizes of larvae. Uniform test larvae are secured by using those that pass through a U. S. Standard Sieve Series No. 14 sieve but not through a No. 16 sieve. Such larvae will range in weight from 5-7 mg. If the above conditions are adhered to, 3 to 4 months old larvae will be of test size.

(d) A gentle stream of air, such as is produced by a low-moving fan or from a hair dryer, is useful in removing cast skins from cultures. Separation of larvae from extraneous materials such as food, frass, cast skins, dead larvae and adults, and pupae, may be accomplished by the use of the insects' negative phototropic response. By placing the material to be separated at one end of a flat, smooth tray and putting a light over it, the larvae can be collected conveniently at the other end in a short time. Mites may be removed from larvae, pupae, or adults by placing infested insects in a jar that is half filled with sterilized rearing medium and rotating the container, screening to separate larvae from food, and destroying or sterilizing this food which contains the mites. It may be necessary to repeat this procedure several times.

APPENDIX II

Procedure For Rearing and Handling the Webbing Clothes Moth

Scope

A6. The following procedure is to be used for rearing and handling the webbing clothes moth, *Tineola bisselliella* (Hum.)

Rearing Containers

A7. Wide-mouth glass jars of 1-qt. or ½-gal. capacity are suggested. The flat lid shall be replaced by coarse filter paper and held

in place by the ring used to fasten the discarded lid. Other types of containers of similar size are satisfactory.

Oviposition Cage

A8. Adult moths are placed in a pint jar containing 4 to 6 squares of clean, all-wool fabric 3"x3". Allow these adults to deposit their eggs on these pieces of fabric for 2 to 4 days. At the end of this period remove the adults and destroy. Since the eggs hatch in 4 days, this is the maximum interval that may be allowed between egg collections.

Rearing Medium

A9. Use clean, scoured, undyed wool cloth supplemented with about one teaspoonful of autoclaved dry brewer's yeast to each 30 grams of cloth.

Insectary Conditions

A10. A temperature of 80° plus or minus 2°F. and a relative humidity of 55 plus or minus 5 per cent is to be maintained.

Maintenance of Culture

A11. The adults in mature cultures shall be transferred to the oviposition cage either by suitable suction or by introducing into the container with the adults a small amount of CO₂ gas. The adults can then be removed from the container and transferred to the oviposition jar without difficulty. 400 to 500 adult webbing clothes moths will deposit approximately 4,000 eggs in two to four days. The 3"x3" pieces of fabric are then placed in an enamel pan and vigorously brushed with a ½ inch glue brush to remove the eggs. The eggs are screened through a 40-mesh sieve and retained on a 60-mesh sieve. The eggs are measured in a graduated centrifuge tube, 0.2 ml. representing approximately 4,000 eggs. These are sprinkled on 4"x10" strips of clean scoured wool fabric (total 25-30 grams wool) treated with about a teaspoonful of dry yeast. The roll of wool strips is then placed in a one or two-quart, wide-mouth jar, covered with filter paper, lid, and

kept under conditions described in Section A10 until of test age.

APPENDIX III

Procedure For Rearing and Handling the Furniture Carpet Beetle

Scope

A12. The following procedure is to be used for rearing and handling the furniture carpet beetle, *Anthrenus vorax* (Waterh.).

Rearing Containers

A13. Wide-mouth glass jars of 1-qt. capacity are suggested. The flat lid shall be replaced by coarse filter paper and held in place by the ring used to fasten the discarded lid. Other types of container of similar size are satisfactory.

Rearing Medium

A14. Use clean, scoured, undyed wool cloth adding about one teaspoonful of autoclaved dry brewer's yeast to each 30 grams of cloth.

Insectary Rearing Conditions

A15. The beetle rearing room or incubator shall have a constant temperature of 80° plus or minus 2°F. and a relative humidity of 55 plus or minus 5 per cent.

Maintenance of Cultures

A16. (a) Place 100-200 adult carpet beetles in a one pint jar with several 3 inch squares of wool cloth supplemented with brewer's yeast. After one week remove wool cloth patches to rearing jar (Section A13) and replace dead adult beetles.

(b) Examine culture jars at weekly intervals and add wool cloth supplemented with dry brewer's yeast sufficient to maintain an adequate food supply.

(c) Test larvae are obtained from cultures during the sixth week after removal of the eggs from the oviposition jar. Larvae are easily transferred with light forceps from the wool cloth in the rearing jar to the test cage.

(d) Remove pupae from the older cultures to a one pint jar pro-

(Turn to Page 276)

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From October 1951 to October 1953

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"Soap and Sanitary Chemicals" Index

Index to the Articles Appearing in Monthly
Issues of "Soap and Sanitary Chemicals" for
the Years 1947, 1948, 1949, 1950 and 1951

A	Month	Year	Page
A.A.S.G.P. Holds 21st Meeting.....	Feb.	1948	41
AASGP Meets Jan. 28-29.....	Oct.	1947	45
Adhesive, Rosin, as an insecticide.....	Nov.	1950	127
Advertising Claims, Soap.....	Feb.	1951	125
Advertising, Soap.....	Oct.	1950	40
Aerosol Deodorant, Designing an.....	Sept.	1949	135
Aerosol Dispensers, A Test Method for Commercial.....	Sept.	1947	119
Aerosol Formulations, Stability of.....	Nov.	1947	116
Aerosol Formulations with Lethane.....	Feb.	1951	125
Aerosol Progress, Insecticidal.....	Feb.	1947	124
Aerosol Test Method for Flying Insects, NAIDM.....	May	1949	114
Aerosol Valves.....	Jan.	1951	107
Aerosols.....	July	1950	114
Aerosols, a Boom Industry.....	Jan.	1950	117
Aerosols—A Symposium Discussion.....	Aug.	1949	110
Aerosols, Evaluation of Liquefied-Gas.....	Aug.	1951	129
Aerosols, Insecticidal.....	Sept.	1951	141
Aerosols, Low Pressure.....	July	1948	147
Aerosols, Liquefied Gas Insecticidal.....	Feb.	1949	123
Aerosols, Low Pressure.....	Jan.	1949	120
Aerosols, Stabilization of Wax.....	May	1951	106
Aerosols, Shortage of.....	Nov.	1948	127
Air Conditioning Filters.....	Aug.	1948	43
Air Deodorizers.....	May	1947	131
Air Sterilization, Triethylene Glycol for.....	June	1947	133
Alginate.....	May	1947	35
Alkali, Free in Soaps.....	Jan.	1948	42
Alkali Outlook, The.....	Feb.	1947	50
Alkyl Aryls, Sulfonation of.....	Dec.	1950	48
Allethrin Without a Synergist.....	Sept.	1950	127
Allethrin Symposium.....	Aug.	1950	106
American Oil Chemists' Society Meets.....	Dec.	1948	40
Ammonia—Its Uses in Cleaners.....	Jan.	1950	38
Antiseptic Soaps.....	July	1950	35
Antiseptic Soaps.....	Dec.	1948	44
Antiseptics and Disinfectants as Formu- lated for the British Market I.....	Oct.	1947	127
Antiseptics and Disinfectants as Formu- lated for the British Market II.....	Nov.	1947	133
Antiseptics, Disinfectants and I.....	Jan.	1947	125
Antiseptics, Disinfectants and II.....	Feb.	1947	139
Antu.....	Apr.	1947	147
Antu, the Lethal Dose of.....	Jan.	1948	127
Applying New Insecticide Act.....	Dec.	1947	141
Army Reports on Soap Cutbacks.....	Dec.	1945	51
Auto Cleaning Products (I).....	Apr.	1951	37
Auto Cleaning Products (II).....	May	1951	31
Average Sanitary Supply House.....	Sept.	1950	110

B	Month	Year	Page
Bacteriological Evaluation of Cationic Ger- micides.....	May	1947	139
Bacteriological Evaluation of "Cationics," a Note on the Problem of.....	June	1947	151
Bar Soaps, Hard Water.....	June	1950	42
Bar Soaps, Marking Net Weight.....	June	1949	37
Barrier Creams, Developments in.....	Jan.	1948	86
Bath Preparations.....	Feb.	1948	81
Bath Products (I).....	Feb.	1951	46

	Month	Year	Page
Bath Products (II).....	Mar.	1951	46
Beer Cans for Aerosol Dispensing.....	Oct.	1947	122
Bentonite as a Soap Builder.....	Aug.	1950	61
Benzene Hexachloride.....	Jan.	1947	115
Big Little Soap Department.....	Mar.	1949	47
Bleaching Dark Grease.....	Aug.	1949	81
Body Lice Ovicide.....	Aug.	1950	117
Bottle Cleaning Compounds.....	Sept.	1951	39
British Methods of Fat Splitting.....	Jan.	1947	67
British Soap Industry.....	May	1947	33
British Synthetic Soap Cake.....	Nov.	1947	69
Buffalo as a Sanitary Supply Market.....	Nov.	1950	114
Bug Buttons.....	Apr.	1948	151
Builders, Efficiency Study of in Hard Water..	Feb.	1949	81

C	Month	Year	Page
Cages, Disposable Insect.....	Oct.	1951	143
Canada Raises Soap Price Ceilings.....	June	1947	53
Canadian Soap Industry.....	Oct.	1947	46
Canadian Soap Output Down in 1946.....	Aug.	1948	46
Canadian Soap Sales.....	July	1949	41
Carbon Tetrachloride.....	Apr.	1949	45
Carnauba, a Short Test to Detect Hydrocarbon Adulteration.....	Sept.	1951	139
Carnauba Wax—Adulterated?.....	July	1949	113
Carnauba Wax Output Expected to Increase.....	May	1951	123
Carnauba Wax, Replacements for.....	Mar.	1951	111
Carpet Cleaning on Location.....	Sept.	1949	37
Cation-Active Agents.....	Mar.	1947	145
Cation-Active Germicides.....	Aug.	1947	151
Cationic Germicides, Bacteriological Evaluation of.....	May	1948	139
Cations, Properties and Uses of Surface-Active..	Mar.	1947	39
Caustic, Fat Splitting with.....	Feb.	1947	79
Caustic Potash.....	Jan.	1948	33
Cellulose Derivatives in Soap.....	Aug.	1950	29
Census, Soap.....	July	1949	25
Chelating Agents in Soaps.....	Mar.	1950	45
Chemical Consultant, Why a.....	Nov.	1950	40
Chigger Control.....	Feb.	1949	135
Chilling, Effect of, on Soap.....	Nov.	1949	69
Chlordane.....	Aug.	1948	126
Chlordane, British Report Reviews.....	Mar.	1949	149
Chlordane, Emulsifiable Concentrates of.....	Mar.	1948	137
Chlorinated Hydrocarbons.....	Apr.	1950	137
Chlorinated Insecticides on Livestock.....	June	1949	131
Chlorine in DDT Insecticides, Determination of..	Oct.	1947	147
Cinerin I Homolog Tested.....	Oct.	1949	118
Clad Steels, Trend to, for Soap Production....	Mar.	1949	81
Clarification, Centrifugal of Waxes and Varnishes.....	Feb.	1951	118
Cleaners Build Chain Store's Volume.....	Dec.	1949	39
Cleaners, Floor Soaps and.....	June	1947	36
Cleaners, Radiator.....	May	1949	40
Cleaning and Polishing Cloths.....	Feb.	1947	129
Cleaning Contaminated Surfaces.....	July	1951	30
Cleaning the "Mainliners".....	Sept.	1948	40
Cleaning, Railroad Car.....	June	1947	33
Cleansers and Dermatitis.....	Dec.	1951	43
Coconut Oil Market.....	Jan.	1948	41
Coconut Oil Outlook.....	July	1949	28
Coconut Oil, World Outlook.....	Aug.	1949	30
Colgate-Palmolive-Peet, a Short History of.....	Oct.	1948	48

	Month	Year	Page
Colgate-Palmolive-Peet, New Kansas City Unit.....	Nov.,	1951	35
Colored Shoe Polishes.....	Sept.,	1947	116
Committee D-12 Meets.....	Mar.,	1947	49
Committee D-12 Meets in New York.....	Apr.,	1948	102
Conner on Insecticide Act.....	Jan.,	1948	171
Continuous Process for Soap Making, A French (I).....	Oct.,	1947	73
Continuous Process Soap Making (II).....	Nov.,	1947	65
Continuous Process Soap Making (III).....	Dec.,	1947	73
Continuous Processes, Some Observations for the Small Soap on I.....	Feb.,	1947	75
Continuous Processes, More Observations for the Small Soap on II.....	Mar.,	1947	73
Continuous Soap Process.....	Apr.,	1948	77
Cooperative Research, Davis Urges.....	May,	1949	163
Crack Fillers.....	Mar.,	1949	127
Cyclohexenone, Toxicity Data on Piperonyl.....	June,	1947	163

D

Dairy Cleaners.....	May,	1948	40
Danger Ahead.....	July,	1949	102
DDT and DDT Emulsion Concentrates, Propose New Federal Specs for.....	Aug.,	1947	137
DDT Developments.....	July,	1949	107
DDT During Dry Cleaning, Mothproofing with.....	May,	1947	36
DDT—Oil Larvicides.....	Aug.,	1949	127
DDT Poison Articles by Deutsch Discounted.....	Apr.,	1949	147
DDT, Penetration of.....	Jan.,	1948	118
DDT Residues.....	Aug.,	1947	123
Deodorant Soaps.....	Jan.,	1951	34
Deodorizers, Air.....	May,	1947	131
Dermatological Action of Skin Cleaners.....	May,	1948	33
Detergency in the Laundry.....	Dec.,	1948	79
Detergency Testing.....	Apr.,	1949	77
Detergent Builders.....	June,	1948	75
Detergent Developments.....	Feb.,	1950	41
	Mar.,	1950	48
	Apr.,	1950	45
	Feb.,	1949	79
Detergent Evaluation.....	Apr.,	1948	51
Detergent Field, New Concepts and Trends in.....	Aug.,	1951	79
Detergent Performance.....	Aug.,	1949	29
Detergent Selling in Chicago.....	July,	1950	61
Detergent-Sanitizer Performance.....	Feb.,	1951	41
Detergent Solutions, High Viscosity.....	Aug.,	1951	43
Detergent Use at Peak.....	Dec.,	1950	69
Detergents, Analysis of.....	Nov.,	1949	44
Detergent Testing, Oil Chemists Discuss.....	Apr.,	1948	41
Detergents for Automatic Washing Machines.....	Aug.,	1948	42
Detergents for Cleaners.....	Dec.,	1950	45
Detergents for Printers Type.....	Sept.,	1951	35
Detergents for Textiles (I).....	Oct.,	1951	51
Detergents for Textiles (II).....	June,	1947	40
Detergents, Mersolate—Their Production and Blending with Soaps.....	June,	1950	37
Detergents of the Future.....	June,	1951	79
Detergents in Sewage.....	Oct.,	1950	40
Detergents, Non-Ionic, Flake Form.....	Apr.,	1951	35
Detergents, Sales and Applications.....	Mar.,	1947	37
Detergents, Synthetic I.....	Apr.,	1947	45
Detergents, Synthetic II.....	Sept.,	1949	77
Detergents, Variables in.....	Oct.,	1947	147
Determination of Chlorine in DDT Insecticides.....	Jan.,	1947	133
Determination of Freon Insolubles in Pyrethrum Extracts.....	Feb.,	1947	126
Determining Tack of Self Polishing Wax Films.....	Apr.,	1947	81
Development of Mersol.....	June,	1947	69
Dish Washing Germicidal.....	Sept.,	1950	40
Dishwashing Compound, Propose New Capacity.....	May,	1947	36
Dishwashing Compound, Propose New Specification for.....	June,	1947	43
Dishwashing Detergents.....	Apr.,	1947	48
Dishwashing, Detergents for Mechanical.....	Dec.,	1950	37
Disinfectants and Antiseptics I.....	Jan.,	1947	125
Disinfectants and Antiseptics II.....	Feb.,	1947	139
Disinfectants as Formulated for the British Market, Antiseptics and.....	Oct.,	1947	127
Disinfectants for Tuberculosis Hygiene (I).....	Sept.,	1951	131
Disinfectants for Tuberculosis Hygiene (II).....	Oct.,	1951	145
Disinfectants, How, When and Where to Sell.....	Apr.,	1948	143
Disinfectants, Pine Type, Synthetic Phenols in.....	Dec.,	1949	137
Disinfectants, Postwar Problems in Testing.....	Mar.,	1947	129

	Month	Year	Page
Disinfectants, Practical Aspects of.....	Mar.,	1948	141
Dispersion, Chemical, the Expanding Rationale of.....	Mar.,	1949	122
	Apr.,	1949	139
Dispersions, Soap.....	June,	1949	122
	July,	1949	115
	Oct.,	1949	127
Dodge & Olcott is 150 Years Old.....	Nov.,	1948	44
Dog Soaps.....	Jan.,	1948	36
Dry Cleaning Detergents.....	July,	1950	29

E

Eastern NSSA Meets in New York.....	Dec.,	1947	174A
Eastman Kodak Plant, Keeping the, Spotless.....	Sept.,	1951	127
Economic Poison Laws.....	Nov.,	1947	115
Economic Poisons Officials Meet.....	Nov.,	1947	159
Electron Microscope Studies Bright-Drying Wax Dispersions.....	Aug.,	1947	131
Employment in the Soap Plant.....	May,	1948	45
Emulsion Polishes.....	May,	1948	145
Emulsions, Formulations of.....	July,	1951	43
Epidemic Control.....with DDT, Antu and 1080 I.....	May,	1947	127
Epidemic Control.....with DDT, Antu and 1080 II.....	June,	1947	153
Essential Oil Outlook.....	Sept.,	1948	47
Essential Oils, Recent Developments in (I).....	Mar.,	1951	39
Essential Oils, Recent Developments in (II).....	Apr.,	1951	42
Essential Oils, Recent Developments in (III).....	May,	1951	35
Essential Oils, Recent Developments in (IV).....	June,	1951	37
Estimation of Pyrethrins.....	Sept.,	1947	131
Evaluating Dishwashing Detergents.....	Apr.,	1947	48
Evaluating Tests for Chemical Specialties.....	Jan.,	1950	42
Evaluating Detergents.....	Jan.,	1950	69
Evaluation of "Cationics," a Note on the Problem of Bacteriological.....	July,	1947	151
Evaluation of Synthetic Detergents.....	May,	1947	69
Export Controls, Soap.....	Aug.,	1947	35
Exports, Soap.....	May,	1949	39
Exports, Soap, U. S.....	Jan.,	1949	43

F

Fabrics, Effect of Insecticides on.....	Aug.,	1949	131
Fat Hardening Process.....	Mar.,	1947	77
Fat Prices, Soapers Testify on.....	Aug.,	1949	57
Fats and Oils, Foreign, Renderers Defend Fees on.....	July,	1949	41
Fat Splitting, British Methods of.....	Jan.,	1947	121
Fat Splitting Costs, Reducing.....	Sept.,	1949	81
Fat Splitting, Methods of.....	Oct.,	1949	79
Fat Splitting with Caustic.....	Feb.,	1947	79
Fats and Oils Market '51 and '52.....	Aug.,	1951	31
Fatty Acid Processing.....	Feb.,	1948	55
	Mar.,	1948	46
Fatty Acid Trends.....	May,	1947	41
Fatty Acids and Liquid Soaps.....	Sept.,	1949	41
Fatty Acids, Soap from.....	June,	1949	77
"Fatty Acids, Their Chemistry and Physical Properties," Review of.....	Jan.,	1948	57
Fatty Alkylolamides in Soap.....	Apr.,	1950	37
F. D. A. Method, Revamping the.....	Apr.,	1947	138
F. D. A. Phenol-Coefficient Test, Increasing Efficiency of.....	Oct.,	1947	73
Federal Spec. for Painted Surface Cleaner, New.....	Aug.,	1947	43
Federal Trade Commission in Your Business.....	Jan.,	1948	123
Federal Trade Commission Meets Wax Industry Group on Rules.....	May,	1948	171
Filter Sheets, Metal, Solve Fat Filtration Problems.....	Aug.,	1949	73
Finishing of Toilet Soaps.....	Nov.,	1951	79
Fish Oils.....	July,	1948	45
Fitch Case, The.....	Nov.,	1947	40
Floating Soaps.....	Mar.,	1950	41
Floor Maintenance Equipment, Modern.....	May,	1950	135
Floor Products, Consumer Preferences.....	June,	1950	149
Floor Sealers.....	Dec.,	1949	122
Floor Sealers and Hardeners.....	Sept.,	1948	129
Floor Soaps and Cleaners.....	June,	1947	36

	Month	Year	Page
Floor Wax Practice Rules Proposed by FTC.....	May,	1951	125
Floor Waxes, a Machine for Evaluating			
Dirt Retention of.....	Jan.,	1949	127
Floor Wax Market, A Statistical Survey.....	Dec.,	1947	155
Floor Wax, Specifications, Revised.....	Dec.,	1949	141
Floors and Floor Finishes, Safe.....	Sept.,	1950	121
Fly Control Campaigns.....	May,	1947	167
Fly Larvicide Tests.....	Mar.,	1947	141
Fly Resistance, Where Are We Going With?.....	June	1951	139
Foam Measurement	Aug.,	1950	38
Food Establishments, Sanitation in.....	Jan.,	1947	121
Food Plant Sanitation.....	May,	1948	139
French Continuous Process for Soap Making, A.....	Oct.,	1947	73
Freon-Insolubles in Pyrethrum Extract,			
Determination of	Jan.,	1947	133
FTC Cites Insecticides.....	Aug.,	1950	143
F.T.C. Holds Conference on Floor Wax Trade			
Practices	Sept.,	1948	145
Fungicide Weathering Tests.....	Aug.,	1949	137
Fungistatic Power	Aug.,	1949	137

G

German Soap Industry.....	Jan.,	1949	71
German Synthetic Detergents.....	July,	1948	67
German Synthetic Fats.....	Aug.,	1947	69
Germicidal Action, a Capacity Test for.....	Feb.,	1951	133
Germicidal Aerosols	May,	1948	125
Germicidal Dish Washing.....	July,	1947	69
Germicidal Liquid Soaps.....	Aug.,	1950	36
Germicides, Quaternary Ammonium.....	June,	1947	145
Germicides, Testing	Sept.,	1950	131
Germicides—What the Public Health Service			
Thinks of	Aug.,	1951	133
Gillette Report on Oils and Fats.....	May,	1950	46
Gloss, Its Evaluation in Floor Waxes.....	Mar.,	1950	133
Glass Wax Sales Brings Imitation Lawsuits.....	July,	1948	39
Glycerine	Aug.,	1947	41
Glycerine Market	Apr.,	1949	43
Glycerine Outlook	Apr.,	1950	43
Glycerine, Purification of.....	Dec.,	1949	73
Glycol Vapors for Air Sanitation—FDA View.....	Feb.,	1950	123
Grand Central Terminal, Cleaning.....	Oct.,	1951	138

H

Hair Shampoos, Evaluating.....	Jan.,	1951	59
Hand Cleaners and Protectants (I).....	June,	1951	31
Hand Cleaners and Protectants (II).....	July,	1951	34
Hand Soap Abrasive.....	Aug.,	1948	41
Hard Surface Cleaners (I).....	June	1951	49
Hard Surface Cleaners (II).....	July,	1951	38
Hearings, Soap, Revised.....	Sept.,	1949	33
High-Titer Soap Propose New Specification for.....	June,	1948	73
Hood Household Chemical Plant.....	Oct.,	1950	113
Hospital Laundering, Soaps Vs. Synthetics for.....	June,	1949	49
Hotel Cleaning	Nov.,	1948	41
Hotel Market, Selling the.....	Apr.,	1949	124
House Fly Control, New Methods of.....	Jan.,	1951	102
House Fly Control Outlook.....	Dec.,	1950	118
House Fly Tolerance for Insecticides.....	Mar.,	1950	122
Household Sanitary Products, Trends in			
Consumer Demand for.....	July,	1948	123
How to Sell Sanitary Supplies to Hospitals.....	May,	1948	129
Hydrocarbons, Soap from.....	July,	1949	63
Hypochlorites as Sanitizers.....	Aug.,	1949	119

I

Inactivator, a Quaternary.....	Jan.,	1949	131
Identification of Cleaner Ingredients.....	June,	1948	43
Insect Repellents, New.....	Mar.,	1947	124
Industrial Soaps	Jan.,	1947	40
Industrial Soaps and Detergents, Expanded			
Uses for	Oct.,	1951	39
Insect Control on Aircraft.....	Aug.,	1951	122
Insect Control Problems.....	Feb.,	1948	143
.....	Mar.,	1948	151
Insecticide Resistance, AAEE Tampa Topic.....	Jan.,	1950	127
Insecticidal Aerosol Progress	Feb.,	1947	124

	Month	Year	Page
Insecticidal Residues, Testing	Oct.,	1947	124
Insecticidal Surface Coatings.....	Feb.,	1948	39
Insecticide Act, Applying New.....	Dec.,	1947	141
Insecticide, Act, New	Aug.,	1947	114
Insecticide Act Regulations	Oct.,	1947	160A
Insecticide, Bill, New	Feb.,	1947	133
Insecticide Bills, State.....	Mar.,	1949	171
Insecticide Laws, Up-to-Date.....	May,	1951	110
Insecticide Residues, Testing	June,	1947	139
Insecticide Resistant Flies.....	July,	1950	121
Insecticide Resistant Houseflies	Aug.,	1948	139
Insecticide Volume Up.....	Nov.,	1949	125
Insecticides Against Roaches	Mar.,	1948	147
Insecticides, Analyzing New.....	June,	1949	127
Insecticides, Chemicals in.....	Feb.,	1950	125
Insecticides for Livestock Pest Control.....	June,	1950	131
Insecticides, Newer Synthetic	May,	1947	127
Insecticides, What's Ahead for.....	June,	1947	135
Institutional Uses of Sanitary Chemicals.....	Aug.,	1951	118
Ion-Exchange, Expanded Uses Seen for.....	June,	1949	81
Israel's Soap Industry.....	Jan.,	1950	33

K

Keeping a City Apartment Clean.....	Apr.,	1948	147
Kranich Soap Company—1921 to 1946.....	Jan.,	1947	33

L

Label Problems	Apr.,	1949	126
Label Warnings	Dec.,	1949	120
Labeling, Why Precautionary?.....	June,	1949	143
Lanham Act, The.....	Jan.,	1947	31
Lanolin Soaps	Apr.,	1945	41
Larvicide Tests, Fly.....	Mar.,	1947	141
Laundry Bleaches	Nov.,	1948	37
Laundry Bluings	Oct.,	1948	43
Laundry Practice, Modern.....	Mar.,	1949	79
Laundry, Soaps for the.....	Mar.,	1949	41
Laundry Sours	Aug.,	1948	37
Laundry Starches	Jan.,	1949	33
Lecithin in Soaps.....	Oct.,	1949	81
Lever Expansion Plans.....	July,	1948	41
Lever Plant, New.....	July,	1951	27
Liability, Product, for the Soap Manufacturer.....	Nov.,	1950	37
Lindane—a Review of its Development and			
Background	Sept.,	1951	135
Linoleum and Paint Cleaners, Evaluation of.....	July,	1950	32
Liquid Hand Cleaners.....	Apr.,	1948	37
Liquid Hand Soap, Automatic Manufacture.....	Dec.,	1951	45
Liquid Soap: Consumer View.....	Nov.,	1951	49
Liquid Soap, How a Brewery Switched to.....	Apr.,	1951	122
Liquid Soap Manufacture.....	Nov.,	1950	69
Liquid Soap, Clarifying.....	Apr.,	1948	43
Liquid Soaps	Sept.,	1948	71
Liquid Soaps in Glass Containers.....	Nov.,	1947	33
Lubrication in Soap Plants.....	Apr.,	1951	71

M

Maintenance Chemicals	June,	1951	134
Management Development	Jan.,	1949	41
Management's Responsibility to Employees.....	July,	1948	42
Man-Hours Spent in Soap Making.....	June,	1950	49
Mazzoni Soap Drying Process, The.....	May,	1947	38
Measuring Detergent Power.....	Feb.,	1950	75
Medicated Soaps	Sept.,	1951	83
Medium for Study of Quaternary Bactericides,			
A New	Aug.,	1947	119
Merchandise Mart Sanitary Maintenance.....	May,	1950	130
Merchandising, Soap	Apr.,	1951	41
Mersol, Development of.....	Apr.,	1947	81
Mersol Detergent Products, Development of.....	Feb.,	1948	83
Mersolate Detergents—Their Production and			
Blending with Soaps.....	June,	1947	40
Metal Cleaners, Diphasic Wetting.....	Feb.,	1949	43
.....	Mar.,	1949	45
Metal Cleaners, Propose New Federal Specifica-			
tions for	June,	1947	77
Mildew Preventives	Nov.,	1947	119

	Month	Year	Page
Mildew Products	Oct.,	1950	110
Mildewproofing Compounds	Apr.,	1948	171
Milwaukee Journal Survey Shows Rise in Synthetic Detergents	June,	1949	43
Milwaukee Journal Survey Shows Detergent Use Rise	Sept.,	1948	57
Monsavon Process, Soapmaking by	May,	1949	69
Moth Products	Mar.,	1949	133
.....	Apr.,	1949	133
Mothproofing Larvicide, A New	June,	1947	143
Mothproofing with DDT During Dry Cleaning	May,	1947	122

N

N.A.I.D.M. Elects Baird at 34th Annual Meeting	Dec.,	1947	134
N.A.I.D.M. Meets at Spring Lake	June,	1948	135
.....	July,	1948	127
N.A.I.D.M. Meets in New York	Dec.,	1948	1939
N.A.I.D.M. Meets in Chicago	June,	1947	130
N.A.I.D.M. Meets in Chicago	July,	1947	123
N.A.I.D.M. Meets June 9-11	May,	1947	157
N.A.I.D.M. to Meet December 1-3	Nov.,	1947	157
N.A.I.D.M.—U.S.D.A. Report on Quaternary Naphthalene	May,	1949	133
Naval Stores Chemicals in the Disinfectant Field	Dec.,	1947	147
Neat Soap, Separation of	Aug.,	1949	71
New Federal Spec. for Painted Surface Cleaner	Aug.,	1947	43
New Insect Repellents	Mar.,	1947	124
New Insecticide Act	Aug.,	1947	114
New Insecticide Bill	Feb.,	1947	133
New Insecticide, Progress Report on a	Jan.,	1947	117
New Medium for Study of Quaternary Bactericides, A	Aug.,	1947	119
New Mothproofing Larvicide	June,	1947	143
New Specification for Liquid Insecticide, Propose	Nov.,	1947	141
New York Schools Buy Liquid Soap Dispensers	Dec.,	1948	57
Newer Synthetic Insecticides	June,	1947	127
Niagara Alkali—1900-1950	Oct.,	1950	49
Non-ionic Detergent, Detergency Properties of Systems Containing a Solid	Aug.,	1951	33
Non-Ionic Detergents	June,	1948	47
Non-Ionic Surface Active Agents	Jan.,	1949	37
Non-ionics in the Dry Cleaning Industry	June,	1951	43
Novelty Soaps	Mar.,	1947	33
N.P.C.A. Meets, Elects Hockenyos	Nov.,	1947	167
N.S.S.A. Atlanta Meeting	Nov.,	1947	161
N.S.S.A. Elects Peck	May,	1948	120
N.S.S.A. in 25th Annual Meeting	Apr.,	1948	138
N.S.S.A. Meets	Jan.,	1947	143
N.S.S.A. Meets, Elects Lovinger	May,	1947	145
N.S.S.A. 24th Annual Convention	June,	1947	166A

O

Odor Measurement	June,	1949	133
Oil and Fat Prices Advance Sharply	Oct.,	1947	44
Oil Refining By Distillation	Nov.,	1948	71
Oil Types Used in Pest Control Work	Mar.,	1945	115
Oil Chemists Meet in Chicago	Nov.,	1947	36
Oil Chemists Meet in New Orleans	June,	1947	47
Oils and Fats in 1947	Feb.,	1947	47
Olive Oil	Apr.,	1948	47
Olive Oil Foots, Outlook for	Apr.,	1948	37
Optical Bleaches in Soap	Mar.,	1950	37
.....	Apr.,	1950	48
Outlook for DDT and DDT Insecticides	Sept.,	1947	114
Oxidation of Soap Fats	Feb.,	1951	71

P

Packaging, Contract	May,	1949	37
Packaging Problem, Solving for a Cleaner	May,	1950	49
Paint Brush Cleaners	July,	1948	33
Painted Surface Cleaner, New Federal Spec. for	Aug.,	1947	43
Palm Oil, Outlook for	Mar.,	1948	49

Paradichlorobenzene	Feb.,	1948	157
.....	Dec.,	1948	147
Paraffin and Microcrystalline Waxes	Nov.,	1950	125
Pennsalt's Centennial	Nov.,	1951	51
Performance Testing of Dishwashing Compounds	Sept.,	1948	42
Perfumes, Soap	June,	1946	83
Perfumes in Soaps	Oct.,	1948	83
Perfuming of Liquid Soaps	Aug.,	1950	33
Perfuming of Soaps	Aug.,	1949	69
Perfuming Milled Toilet Soap	Apr.,	1947	83
Perfuming Soap, Hints on	May,	1950	77
.....	Dec.,	1945	67
Perfuming Your Soap (I)	June,	1947	65
Perfuming Your Soap (II)	Aug.,	1947	65
Pest Control Meeting, Oct. 27-29	Oct.,	1947	177
Pesticide Label Rules, USDA Issues	Dec.,	1949	124
Pesticidal Smokes	Aug.,	1949	135
Petroleum Detergents	Aug.,	1948	75
Phosphates	July,	1950	39
Phosphates, Action of	June,	1947	75
Pine Oil	Dec.,	1948	134
Pine Oil Scrub Soaps	Aug.,	1948	135
Piperonyl Butoxide in Aerosol Insecticides	June,	1950	145
Piperonyl Cyclohexenone, Toxicity Data on	June,	1947	163
Planning for a Sales Campaign	Dec.,	1947	36
Polishing Cloths, Cleaning and	Feb.,	1947	129
Port Sunlight, Soap Making at	Apr.,	1947	41
Postwar Problems in Testing Disinfectants	Mar.,	1947	129
Potash Liquid Soap Solutions	Dec.,	1951	48
Potash Soap Assn. Holds Open Forums	June,	1947	44
Potash Soapers Meet	Feb.,	1947	45
Powder Packaging	Oct.,	1949	123
Powdered Soap Products	Mar.,	1949	37
.....	Apr.,	1949	41
Practical Aspects of Quaternaries	Dec.,	1947	130
Premiums-Do They Help Soap?	Mar.,	1948	40
Preparing Soap Samples with the Laboratory Press	Sept.,	1947	43
Print Paste for Soil Cloth, Make-Up of	Feb.,	1951	73
Private Brand Toilet Soaps	Jan.,	1947	36
Product Liability Insurance	May,	1950	45
Profit Sharing	Feb.,	1950	47
Progress Report on a New Insecticide	Jan.,	1947	117
Properties and Uses of Surface-Active Cations	Mar.,	1947	39
Propose New Federal Specs. for DDT and DDT Emulsion Concentrates	Aug.,	1947	137
Propose New Federal Specifications for Metal Cleaners	June,	1947	77
Propose New Specification for Dishwashing Compound	May,	1947	36
Propose New Specification for Liquid Insecticide	Nov.,	1947	141
P.S.A. Plans Meeting Jan. 27	Nov.,	1947	49
Public Health Assn. Meets	Nov.,	1947	165
Puritan Company is 125 Years Old	Dec.,	1948	149
Pyrethrins, Estimation of	Sept.,	1947	131
Pyrethrum Outlook	Mar.,	1951	114
Pyrethrum, Spectrophotometric Evaluation	Nov.,	1951	124
Pyrethrum, What's Ahead for	Oct.,	1950	127
Pyrethroid, New Synthetic, Toxicity to Houseflies	Nov.,	1949	129
Pyrethrum Extract, Determination of Freon-Insolubles in	Jan.,	1947	133
Pyrethrum Flowers, Effect of Drying Methods on Toxicants	Sept.,	1949	118
.....	Oct.,	1949	135
Pyrethrum Refunds Negotiated	Jan.,	1947	123
Pyrethrum, Short Supply Seen for 1949	Apr.,	1949	148A
Pyrethrum, Synthetic	Mar.,	1949	171

Q

Quaternaries, a Review of	Oct.,	1949	129
.....	Nov.,	1949	133
Quaternaries as Germicides	Apr.,	1950	125
Quaternaries as Sanitizers	May,	1949	145
Quaternaries, Bactericidal Properties of	July,	1949	103
Quaternaries, Concerning	Mar.,	1948	155
Quaternaries, How to Sell	June,	1951	145
Quaternaries in Hard Water	Mar.,	1951	117
Quaternaries in the Laundry Field	Mar.,	1949	130

	Month	Year	Page
Quaternaries, Practical Aspects of.....	Dec.,	1947	130
Quaternaries Vs. Hypochlorites.....	Sept.,	1950	114
Quaternaries vs. Phenolics I.....	Nov.,	1947	125
Quaternaries vs. Phenolics II.....	Dec.,	1947	125
Quaternaries, Practical Field Tests for.....	Aug.,	1948	129
Quaternaries, Toxicity of.....	Feb.,	1949	123
Quaternaries Vs. Hypochlorites.....	Apr.,	1951	124
Quaternary Ammonium Compound, Germicidal Behavior of.....	Jan.,	1948	137
Quaternary Ammonium Compounds, Inhibitors for Neutralizing the Germicidal Actions of.....	Sept.,	1948	137
Quaternary Ammonium Compounds, Practical Aspects in Application.....	Mar.,	1950	126
Quaternary Ammonium Germicide, Effect of Metallic Ions on Germicidal Activity.....	Nov.,	1951	131
Quaternary Ammonium Sanitizers as used in the Dairy Industry, Testing.....	Sept.,	1947	123
Quaternary Ammonium Testing, NAIDM-USDA Report on.....	Sept.,	1947	135
Quaternary Ammoniums, A Review of the Testing.....	Nov.,	1948	122
Quaternary Bactericides, A New Medium for Study of.....	Aug.,	1947	119
Quaternary Content in Sanitizing Solutions, Determining.....	Apr.,	1948	163
Quaternary Ammonium Germicides.....	June,	1947	145
Quaternary Inhibitors, Relative Efficiency of.....	Oct.,	1948	134
Quaternary Test.....	Feb.,	1948	159

R

Railroad Car Cleaning.....	June,	1947	33
Railroads Study Sanitation in Camp Cars.....	Apr.,	1948	203
Rat Control Program, Plan Urban.....	Mar.,	1948	175
Rat Control Program Report.....	July,	1943	141
Raticidal Potentialities of "WARF-42".....	Mar.,	1950	131
Raw Materials Handling in the Soap Plant.....	June,	1947	73
Registration Procedure Under the New Federal Insecticide Law.....	July,	1948	133
Registration Procedure Under the New Insecticide Act.....	Feb.,	1948	151
Relation of Insects to Disease.....	Apr.,	1950	129
Renderers Seek Increase in Fat Exports.....	Mar.,	1948	63
Repellents, Animal.....	Sept.,	1949	123
Repellents, New Insect.....	Mar.,	1947	124
Residual Toxicity.....	June,	1948	139
Residual Toxicity Tests on Insecticidal Protective Coatings.....	Apr.,	1948	155
Resistance of House Flies to Insecticides.....	Nov.,	1948	120
Revamping the F. D. A. Method.....	Apr.,	1947	138
Rinse Test, Swab.....	May,	1949	119
Rise in Tallow Forces Soap Price Advance.....	Apr.,	1947	51
Roach Control.....	Nov.,	1948	131
Roach Powder Evaluation.....	Sept.,	1948	120
Rodenticide, New, Available.....	Dec.,	1949	143
Rodent Deterrents for Paper Packages.....	Apr.,	1950	122
	May,	1950	147
Rodenticide Cartridge Development.....	Aug.,	1950	127
Rosin in Soap.....	Sept.,	1948	46
Rotenone, Assaying.....	July,	1949	127
Rug Cleaning.....	Apr.,	1949	46

S

Saddle and Leather Soaps.....	Mar.,	1948	43
Sales Campaign, Planning for a.....	Dec.,	1947	36
Sales Power in Merchandising.....	June,	1950	40
Sales, Retail Detergent, Analyzed.....	Jan.,	1950	35
Sales, Retail Soap.....	Mar.,	1951	43
Sales,—Topic for N. Y. Sanitary Supply Meeting.....	Dec.,	1948	177
Sales, Soap Analyzed.....	Feb.,	1950	50
Salt.....	July,	1949	37
Sampling Soap, Door to Door.....	Sept.,	1950	29
Sanitary Chemicals Featured at Super Market Show.....	July,	1948	159
Sanitary Chemicals in Government Building Maintenance.....	Feb.,	1948	147
Sanitary Supplies for Chicago Market.....	Dec.,	1950	121
Sanitary Supplies for Industry.....	Oct.,	1950	119
Sanitary Supply Plant Layout, Comments on.....	June,	1947	118
Sanitation in Cheese Factories, Discuss.....	Feb.,	1947	147

Sanitation in Food Establishments.....	Jan.,	1947	121
Sanitization—Another View.....	June,	1949	141
Sanitization, Meaning of.....	May,	1949	137
Sanitizers, Detergent.....	Aug.,	1951	37
Sanitizers, Detergent, Quaternary Type.....	Dec.,	1950	133
Scabrin, A New Botanical Insecticide.....	Mar.,	1951	125
Scouring Cleansers, Household.....	May,	1950	41
Sealers, Gym Floor.....	May,	1951	117
Sealers, Terrazzo.....	June,	1951	151
Sealers, Handling of Soap.....	Aug.,	1950	63
Scrub Soaps, End-Use Testing of.....	Mar.,	1948	135
Scrubbing Soaps for Soft Floors.....	May,	1950	44
S.D.M.A. Acts on Coconut Oil Shortage.....	Oct.,	1948	56
Sealers, Gym Floor.....	May,	1951	117
Sealers, Terrazzo.....	Jun.,	1951	151
Self Polishing Wax Films, Determining Tack of.....	Feb.,	1947	120
Sequestering Agents.....	Feb.,	1948	5
Sequestering Agents in Soap.....	Dec.,	1951	91
Shampoo Damage Award.....	Jan.,	1951	27
Shampoo Damage Suit.....	Dec.,	1949	3
Shampoo Formulation.....	July,	1949	61
Shampoos.....	Dec.,	1950	41
Shampoos.....	Jan.,	1951	39
Shampoos, Cream, Formulating.....	Sept.,	1949	77
Shampoos, Detergents for.....	Oct.,	1951	87
Shaving Cream Manufacture.....	May,	1949	71
Shaving Preparations (I).....	Oct.,	1951	44
Shaving Preparations (II).....	Nov.,	1951	39
Shoe Dressings, White.....	Dec.,	1947	38
Sidelines for the Soaper.....	Mar.,	1948	73
Silica, New, for Floor Wax.....	July,	1949	121
	Aug.,	1949	115
Silicated Soap, Manufacture of.....	May,	1948	67
Silicates in Soap.....	Feb.,	1949	77
Silicone Car Polishes.....	July,	1950	111
Silicones in Chemical Specialties.....	July,	1951	114
Skin, Effect of Soap on.....	June,	1949	45
	July,	1949	31
	Jan.,	1948	147
Slipperiness of Walkway Surfaces.....			
Slip Resistance, Field Testing of Waxed Floors for.....	Oct.,	1951	138
Small Soap Maker, The (I).....	Mar.,	1947	43
Small Soap Market, The (II).....	Apr.,	1947	151
Small Spray Chamber, Development and use of a.....	Apr.,	1947	143
Smoke Dispensers for Insecticides.....	Oct.,	1948	141
Soap Advertising.....	May,	1948	39
Soap Assn. Meets, Elects Wrisley.....	Feb.,	1947	41
Soap Business, Looking Back over 60 Yrs.....	Nov.,	1950	44
Soap and Detergent Manufacturers Meet.....	Feb.,	1948	44
Soap Drying Process, The Mazzoni.....	May,	1947	38
Soap Expands Industrial Uses.....	Aug.,	1947	37
Soap Export Control.....	Aug.,	1947	35
Soap for New York Schools.....	May,	1948	161
Soap in Fruit Washing.....	Nov.,	1948	73
Soap Industry, British.....	May,	1947	33
Soap Industry Meetings.....	Jan.,	1947	43
Soap Making at Port Sunlight.....	Apr.,	1947	41
Soap Materials at Chemical Expositions.....	Dec.,	1948	47
Soap Perfumes.....	Feb.,	1948	50
Soap Products at Chicago Toiletries Show.....	Nov.,	1948	57
Soap Progress Since 1900.....	Jan.,	1951	27
Soap, Sanitary Chemicals Discussed at A.C.S. Meeting.....	June,	1948	87
Soap—Synthetic Detergent Mixtures.....	Dec.,	1949	69
"Soap" 25 Years Ago.....	Aug.,	1950	49
Soaps and Syndets—Present and Future.....	June,	1951	27
Soaps and Synthetic Detergents in the Textile Fields.....	Feb.,	1948	47
Soaps and Synthetic Detergents, What's Ahead for.....	Mar.,	1951	35
Soaps at Safety Conference.....	Nov.,	1947	51
Soaps, Detergents and Metal Cleaners at New York A.C.S. Meeting, Discuss.....	Oct.,	1947	41
Soaps for Christmas.....	Sept.,	1951	43
Soaps in the Sanitary Chemicals Supply Field.....	Dec.,	1947	33
Soaps, Novelty.....	Mar.,	1947	33
Soda Ash.....	Oct.,	1948	50
Soda Ash—As a Soap Builder.....	Aug.,	1949	25
Sodium CMC in Synthetic Detergents.....	Mar.,	1948	37
Sodium Pyrophosphate.....	May,	1948	44
Sodium Silicate.....	Dec.,	1948	46
Soft Soap Manufacture.....	Nov.,	1949	40
	Dec.,	1949	39
Soil Removal with Synthetic Detergents.....	Jan.,	1948	65

	Month	Year	Page
Solutions, Soap, Structure of.....	Jan.,	1949	69
Solvent-Detergent Products	Aug.,	1951	47
Solving a Production Problem in Automatic Soap Flake Packaging.....	Sept.,	1947	38
Soot Removers	Feb.,	1949	45
Space Spray Toxicity.....	June,	1948	155
Specialty Soaps	Oct.,	1949	33
Specialty Soap Lines.....	Oct.,	1948	41
Specification for Dishwashing Compound, Propose New	May,	1947	36
Spray Chamber II.....	Aug.,	1948	133
Spray Drying of Detergents.....	May,	1951	63
Spray Drying, Variables in.....	Mar.,	1951	71
Spray-Drying Washing Powders.....	May,	1949	73
Sprayers, Modern Insecticide.....	Feb.,	1951	120
Sprayers Up to Date.....	Sept.,	1948	122
Stability of Aerosol Formulations.....	Nov.,	1947	116
Stanley Home Products.....	Jan.,	1950	45
Stove Polish Formulation.....	July,	1951	79
Sterilization of Surfaces, Role of Atmospheric Humidity	July,	1951	127
Stove Polishes	Mar.,	1947	133
Sulfation of Fats and Oils.....	June,	1950	77
Super Market's Roach Problem.....	Aug.,	1948	143
Superfating Agents	Oct.,	1949	79
Surface-Active Cations, Properties and uses of.....	Mar.,	1947	39
Surface Activity	Jan.,	1948	67
Surfactant Performance	Dec.,	1951	39
Survey Shows Soap Favorites.....	Oct.,	1948	46
Sweeping Compounds	Dec.,	1951	145
Synthetic Bar Detergent.....	June,	1948	71
Synthetic Chemicals in the Textile Industry.....	Sept.,	1947	40
Synthetic Detergent Literature.....	Dec.,	1950	51
Synthetic Detergent Sales in Buffalo.....	Nov.,	1949	33
Synthetic Detergents in Bar Form.....	Dec.,	1949	33
Synthetic Detergents I	Mar.,	1947	37
Synthetic Detergents II	Apr.,	1947	45
Synthetic Detergents, Evaluation of.....	May,	1947	45
Synthetic Detergents, Evaluation of.....	May,	1947	69
Synthetic Detergents for Washing City Streets.....	Dec.,	1947	42
Synthetic Detergents in the Fish Industry.....	Aug.,	1949	90
Synthetic Detergents in the Fur Industry.....	May,	1949	33
Synthetic Detergents Up to Date.....	Aug.,	1949	33
	Sept.,	1949	42
	Oct.,	1949	40
Synthetic Detergents on File.....	Jan.,	1948	39
Synthetic Detergents in the U. K.....	May,	1950	37
Synthetic Detergents, the Retail Market for.....	Dec.,	1948	36
Synthetic Detergents vs. Soap.....	Feb.,	1948	53
Synthetic Detergents Vs. Soap.....	Feb.,	1950	44
Synthetic Detergents, What the Retailer Thinks About	Apr.,	1949	37
Synthetic Gains Seen in Report by ANPA.....	Apr.,	1949	55
Synthetic Fats, German.....	Aug.,	1947	69
Synthetic Glycerine	Sept.,	1948	36
Synthetic Insecticides, Newer	June,	1947	127
Synthetics, Identification of.....	July,	1949	65
Synthetics in Water Systems.....	Oct.,	1949	77
Synthetics, Industrial Uses of.....	Mar.,	1949	77
Synthetics, Toilet Bar Form.....	May,	1951	27
Synthetics, Toxicity of.....	Nov.,	1949	73

T

Tack of Self Polishing Wax Films, Determining.....	Feb.,	1947	126
Tall Oil	Dec.,	1949	41
Tall Oils, Composition of German.....	Mar.,	1948	77
Tallow Acids	Aug.,	1948	45
Tallow, Chemical Bleaching.....	Mar.,	1950	75
Tallow Price Advance, What's Behind the.....	July,	1948	37
Tallow—What Next	Nov.,	1947	42

	Month	Year	Page
Test Cage, Simple Insect.....	June,	1948	161
Testing Insecticide Sprays.....	May,	1948	133
Test Method for Commercial Aerosol Dispensers. A	Sept.,	1947	119
Testing Disinfectants, Postwar Problems in.....	Mar.,	1947	129
Testing Insecticidal Residues.....	Oct.,	1947	124
Testing Insecticide Residues.....	June,	1947	139
Testing the Quaternary Ammoniums.....	Nov.,	1946	125
Testing Quaternary Ammonium Sanitizers as used in the Dairy Industry.....	Sept.,	1947	41
Testing Quaternary Germicides.....	Jan.,	1950	121
	Feb.,	1950	127
Textile Soaps	Sept.,	1950	36
Toilet Soaps	Sept.,	1950	32
	Oct.,	1950	47
	Nov.,	1950	46
Toothpaste, Manufacturing	June,	1949	79
Toxicity	Aug.,	1950	123
Toxicity Data on Piperonyl Cyclohexanone.....	June,	1947	163
Toxicity of DDT Residues.....	May,	1948	130
Toxicity of a Synthetic Pyrethrin.....	Mar.,	1950	139
Toxicity Studies	July,	1949	127
Toxicity to House Flies of TDE Ethyl Analog and Heptachlor	Nov.,	1951	139
Toxicity, Relative, of Insecticides.....	Dec.,	1951	148
Trademarks, Soap and Cosmetic.....	Apr.,	1951	47
Transparent Soap Making.....	Oct.,	1950	69
Transparent Soaps	Apr.,	1950	41
Triethylene Glycol for Air Sterilization.....	June,	1947	133
Triethylene Glycol for Air Sanitation.....	Nov.,	1949	120
	Dec.,	1949	129
Trisodium Phosphate	Nov.,	1948	46

U

USDA Recommendations on DDT Use.....	June,	1947	163
U. S. Sanitary Specialties Corp. Plant.....	Aug.,	1950	110

W

Warfarin Progress Report.....	Jan.,	1951	111
Washability of Waxed Floors.....	Sept.,	1951	49
Washing Powders, Spray Dried.....	Sept.,	1950	61
Washroom Sanitation Specialties.....	Oct.,	1947	139
Water Conditioners, Chemical.....	Apr.,	1950	77
Water Emulsion Waxes.....	Apr.,	1951	133
Waterless Hand Cleaners.....	Apr.,	1948	48
Wax Additives, Detecting.....	July,	1951	122
Wax Dispersions, The Electron Microscope Studies Bright-drying.....	Aug.,	1947	131
Wax Emulsions, Formulation by HLB.....	Nov.,	1951	128
Wax Films, Tack of.....	June,	1948	151
Wax Hearing	Aug.,	1949	133
Wax Suspensions, Examination of by Turbimetric Methods	Sept.,	1949	129
Wax Wear Resistance.....	Aug.,	1950	114
Waxes, Emulsion, Gelling of Self-Polishing.....	Oct.,	1949	137
Welch, Holme & Clark is 110.....	Aug.,	1948	93
West Disinfecting	Sept.,	1947	35
Whale Oil	June,	1948	49
Whale Oil	Apr.,	1949	49
What the Distributor Expects from the Manufacturer	Jan.,	1948	133
What's Ahead for Insecticides.....	June,	1947	135
White Shoe Dressings.....	Dec.,	1947	38
Whitening Agents in Soap.....	Nov.,	1949	36
Wood Preservatives	Nov.,	1950	114
Wool Wax	July,	1948	69
Wool Wax Acids.....	Jan.,	1948	67
Wrapper, New Soap, Is Spur to Sales.....	Oct.,	1951	42



AEROSOL TEST METHOD

(From Page 253)

the chamber or, if allowed to remain, must be at sufficiently low levels so as not to affect test results. Where chamber surfaces permit, wiping with a clean cloth saturated with alcohol containing 10 per cent acetone will remove a number of toxic residues.

C. Assembling the Data

The number of "up" flies must be counted and recorded at the end of the 15-minute exposure period. The dead flies are counted 24 hours (± 1 hour) later, preferably by removing them from the recovery cage. Only flies that show no sign of life upon being touched may be counted as dead. If the "down" flies were counted as they were collected, the sum of the "down" and the "up" flies yields the total flies in the test. If the "down" flies were not counted as collected, the recovered flies are killed by placing the cage in an oven at 170° F. for a few minutes, after which they are counted. The sum of recovered and dead flies yields the "down" flies and this sum added to the "up" flies yields the total flies used in the test. The *Aerosol Test Knockdown Mortality* is the per cent dead of total flies. In the *Aerosol Test Knockdown Mortality* calculation, the "up" flies at the end of the 15-minute exposure period are considered to be alive at the end of the 24-hour observation period. The *Aerosol Test Knockdowns* are the per cent "down" of total flies at 5, 10 and 15 minutes.

In the preceding paragraph it is assumed that the "up" flies at 15 minutes are counted and discarded, and not captured and held for a 24-hour mortality observation. If these flies are captured, the *Aerosol Test Mortality* calculation can be made, and this includes the 24-hour dead of the "up" flies. In such a procedure, the captured flies must be held in a separate recovery cage under conditions specified for the "down" flies, and the 24-hour mortality count must be taken in a similar manner. It is also necessary that

the TOTA run in conjunction with the so-treated experimental samples receive identical treatment. In reporting results, the above terminology must be rigidly adhered to in order to clearly designate whether the "up" flies were captured and held for observation or whether they were assumed to be alive at 24 hours.

The mortality and knockdown definitions are summarized in equation form as follows:

$$(1) \text{ Aerosol Test Knockdown Mortality} = \frac{\text{Dead "Down" Flies} \times 100}{\text{Total Flies}}$$

$$(2) \text{ Aerosol Test Mortality} = \frac{[(\text{Dead "Down" Flies}) + (\text{Dead "Up" Flies})] \times 100}{\text{Total Flies}}$$

$$(3) \text{ Aerosol Test Knockdown, 5, 10 or 15 minutes} = \frac{\text{"Down" Flies} \times 100}{\text{Total Flies}}$$

IV. Conditions for Official Evaluation

1. The tests shall be conducted in accordance with the procedure previously described.

2. At least two cultures of flies, meeting Peet-Grady specifications, shall be used in making an official evaluation.

3. Cages showing a combined mortality and crippling greater than eight per cent on the day of test shall not be used.

4. In the small group procedure, using approximately 100 flies per test, no more than three unknown samples may be tested in conjunction with one TOTA in any one series. Ten tests are run on the TOTA and on each of the unknowns in parallel; that is, test each spray the same number of times on any one day. The samples of a series must be randomized in the order of testing.

5. The large group procedure using approximately 500 flies per test shall be conducted in the same manner as outlined for the small group procedure with the exception that five rather than ten tests are required.

6. The *Aerosol Test Knockdown Mortality* and/or *Aerosol Test Mortality*, and *Aerosol Test Knockdown* (15 minutes) of the unknown sample shall be reported as "meeting the standard" if its average mortality and knockdown, is equal to or greater than that of the TOTA run

in conjunction with it. "Equal to" shall be interpreted as meaning that the results with the unknown do not differ by more than 5 percentage points from the results obtained with the TOTA. If an unknown sample shows a mortality or knockdown less than the TOTA but within the allowable 5 percentage point margin, the average dosage of the unknown must not exceed that of the TOTA.

7. In no case shall numerical values be reported or any letter grade designations be assigned to the test samples as a measurement of the mortality or knockdown.

8. The *Tentative Official Test Aerosol* (TOTA) is restricted to use in the above described procedure and shall be used only as a reference insecticide in house fly aerosol testing.

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FEDERAL SPECIFICATIONS

(From Page 233)

of the finish coats, and the lacquer shall be air-dried 1 hour between coats. The finished panels shall be air-dried for 2 hours, then baked for 18 hours at 66°C. (150°F.), and allowed to cool at room temperature. To panels 1A and 2A apply several drops of the cleaner and cover with a watch glass. To panels 1B and 2B apply several drops of the comparison solution. After a period of 6 hours, rinse each panel with distilled water, and blow dry with compressed air. The panels shall then be examined for discoloration, softening, or other defects in excess of that shown by panels in contact with the comparison solution.

Cleaning properties.—On two panels each of clear, plate glass, conforming to federal specification, dust pulverized clay until a thin uniform coating is obtained. Spray a mist coat of water on each panel to wet the clay and allow to dry 6 hours. Apply a mist coat of carbon tetrachloride containing 10 per cent of mineral oil (S.A.E. 30). Allow panels to air-dry 24 hours. To one panel apply the cleaner under test, spread over the surface with a rag and immediately wipe off and polish with a clean cloth. Using the same conditions of test, clean the other panel with the comparison solution specified herein and compare the two panels for cleaning properties of each solution.

Nonvolatile content.—Place 50 milliliters of the compound in a tared glass dish and heat on a steam bath to dryness, then in an oven at 100° to 105°C., (212° to 221°F.) to constant weight. Report the weight of the residue as grams per 50 milliliters of compound.

Antifogging.—Clean and polish a piece of clear, plate glass, approximately 6 x 8 inches, with a solution of 15 parts by volume of isopropyl alcohol in 85 parts distilled water. Then apply the compound with a cloth to one-half of the cleaned glass and polish to a clear surface

with absorbent cotton or a soft cloth. Then place the glass vertically so that the treated and untreated halves of the glass plate are side by side horizontally. Spray the entire face of the glass panel with water in the form of droplets from an atomizer. On the portion of the glass treated with the type II compound, the drops of water should spread out and coalesce into a continuous film which will enable the ready reading of printed matter placed 6 inches behind the glass. The untreated portion of the glass should fog and impair the vision to a considerable extent.

PERFUME SPECIFICATIONS

(From Page 249)

Assay: Proceed as directed for the determination of Ketones. (See 1-D), using an approximately 1.3 gram sample, accurately weighed. The difference in cc. of N/2 HCL between titrations of blank and sample multiplied by 0.09615 indicates the weight of ionone in the sample taken for assay.

Alpha Isomer Content: Not less than 90% (See Note 2).

Solubility in Alcohol: Clearly soluble in 10.0 volumes of 60% alcohol.

II. BETA IONONE, PURE

Color, Odor and Appearance: Slightly yellow liquid more fruity and woody in odor than alpha ionone.

Specific Gravity at 25°/25°: 0.941 to 0.947.

(Temp. Correction Factor from n_D^{20}/n_D^{25} C.: 0.0005 per °C.)

Refractive Index at 20° C.: 1.5190 to 1.5215.

Ketone Content: Not less than 98%.

Assay: As described under alpha type ionone.

Beta Isomer Content: Not less than 90% (See Note 2).

III. COMMERCIAL IONONE, ALPHA TYPE

Color, Odor and Appearance: Colorless to yellow liquid, simulating almost exactly the odor of violet, particularly on dilution.

Specific Gravity at 25°/25°: 0.927 to 0.936.

(Temp. Correction Factor from n_D^{20}/n_D^{25} C.: 0.0005 per °C.)

Refractive Index at 20° C.: 1.4970 to 1.5060.

Ketone Content: Not less than 90%.

Assay: As described under alpha type ionone.

Alpha Isomer Content: Not less than 60% (See Note 2).

Solubility: Clearly soluble in 3 volumes 70% alcohol.

IV. COMMERCIAL IONONE, BETA TYPE

Color, Odor and Appearance: Pale yellow to yellow liquid whose odor more nearly resembles beta ionone than commercial ionone, alpha type, does.

Specific Gravity at 25°/25°: 0.940 to 0.947.

(Temp. Correction Factor from n_D^{20}/n_D^{25} C.: 0.0005 per °C.)

Refractive Index at 20° C.: 1.5170 to 1.5215.

Ketone Content: Not less than 90%.

Assay: As described under alpha type ionone.

Beta Isomer Content: Not less than 85% (See Note 2).

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Insoluble.

Propylene Glycol: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Water: Insoluble.

Stability:

Stable to dilute acids and dilute alkalis.

Containers

Ionones should be shipped in glass, tin, aluminum or galvanized iron containers.

Storage

Store preferably in a cool place protected from light.

NOTE 2. For perfume materials, the refractive index is an adequate measure of the proportion of alpha and beta isomers. Where greater accuracy is desired, the quantities may be estimated by isolation of semi-carbazone derivatives or by spectrophotometry. For the latter method, see Young et al., J. Am. Chem. Soc., 66, 855 (1944), observing that the beta content may be determined directly. If the alpha content is desired, both isomers must be determined, because beta shows a considerable absorption at the alpha peak.

CSMA TEXTILE TEST

(From Page 262)

vided with a few pieces of wool cloth. Adults emerge within a week and this jar serves as a source of supply of adults for the oviposition jars.

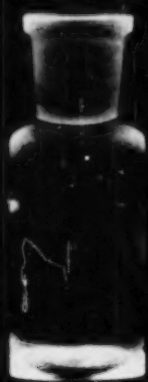
(e) The larval period is 10-13 weeks and the entire life cycle is completed in 12-15 weeks. These cultures are easily maintained for a constant source of uniform test larvae.

(f) Handling methods described in Section A5 (d) are applicable to this species.

INDEX TO ADVERTISERS

Acme Shellac Products Co.	158
Alrose Chemical Co.	156
American-British Chemical Co.	128
American Colloid Co.	11
Ampion Corp.	164
A-M-R Chemical Co.	63
Archer-Daniels-Midland Co.	3
Armour & Co., Industrial Soap Div.	192
Armour & Co., Chemical Div.	84
Arnold Laboratories	179
Aromatic Products Inc.	134
Atlantic Refining Co.	70
Baird & McGuire Inc.	8
G. Barr & Co.	13
Barrett Div.	50
Bersworth Chemical Co.	154
Bobrick Mfg. Corp.	165
Bowen Engineering, Inc.	79
California Spray Chemical Corp.	120
John H. Calo Co.	31
Camilli, Albert & Laloue, Inc.	82
Candy & Co.	94
Chemical Service of Baltimore.	44
Chemical Specialties Mfrs. Association.	254
Chicago Sanitary Products Co.	143
Clifton Chemical Co.	163
Columbia-Southern Chemical Corp.	144
Concord Chemical Co.	58, 204
Consolidated Products Co.	197
Continental Can Co.	14
Continental Car-Na-Var Corp.	92
Crown Can Co.	32
Davies-Young Soap Co.	48
Wm. Diehl & Co.	159
Dobbins Mfg. Co.	178
Dodge & Olcott, Inc.	234
Dow Chemical Co.	36
P. R. Dreyer, Inc.	20
E. I. du Pont de Nemours & Co.	212
Eagle Soap Corp.	46
Eastern Industries	127
Ertel Engineering Corp.	87
Federal Varnish Div.	90
Fine Organics, Inc.	149
Firmenich & Co.	278
First Mchy. Corp.	195
Florasynth Laboratories	Between 210-211
Benj. French Inc.	135
Fuld Bros., Inc.	64
Geigy Co.	3rd Cover
R. Gesell, Inc.	98
Gillespie-Rogers-Pyatt Co., Inc.	161
Givaudan-Delawanna, Inc.	136, 137
Haag Laboratories, Inc.	49
W. C. Hardesty Co.	51
Hewitt Soap Co.	191
Heyden Chemical Corp.	24
Hilton-Davis Chemical Co.	131
Hooker Electrochemical Co.	41, 133
Houchin Mchy. Co.	168
H. D. Hudson Mfg. Co.	180, 181
Hydro-Mist Div.	179
Julius Hyman & Co.	16
Hysan Products Co.	142
Illinois Duster & Brush Co.	30
Imperial Brass Mfg. Co.	167
Industrial Raw Materials Corp.	200
O. G. Innes Corp.	102
Interstate Color Co.	53
Island Equipment Corp.	194
Kearny Mfg. Co.	206
Kinetic Chemicals Div.	10
Lancaster, Allwine & Rommel.	54
Lautier Fils Inc.	111
Leeben Chemical Co.	53
J. M. Lehmann Co.	166
Geo. H. Lincks, Inc.	205
George Lueders & Co.	80
McCutcheon, John W.	54
McLaughlin Gormley King Co.	18

Magnus, Mabey & Reynard, Inc.	122
N. I. Malmstrom & Co.	116
Mantrose Corp.	160
M. Michel & Co.	85
M. & H. Laboratories.	95
Mione Mfg. Co.	103
Moore Bros. Co.	162
M-R-M Co., Inc.	88
National Aniline Div.	4th Cover
National Milling & Chemical Co.	119
National Southern Products Corp.	186
Naugatuck Aromatics Div.	112
Newman Tallow & Soap Machinery Co.	196
Niagara Alkali Co.	146
Ninol Laboratories	208
Nordic Essential Oil & Chemical Co.	172
Onyx Oil & Chemical Co.	148
John Opitz, Inc.	141
Orbis Products Corp.	214
Oronite Chemical Co.	66
Pacific Coast Borax Co.	27
Packer Mchy. Corp.	86
Peck's Products Co.	35
Pennsylvania Refining Co.	140
Perl Machine Mfg. Co.	29
Petrolite Corp.	203
Polak's Frutal Works.	138
John Powell & Co.	15
Prentiss Drug & Chemical Co.	198
Private Brands, Inc.	99
Proctor & Schwartz Inc.	76
Pylam Products Co.	52
Rex-Cleanwall Corp.	92
Rohm & Haas Co.	60
Rosenthal Bercow Co.	34
Chas. Ross & Son Co.	125
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Schimmel & Co.	170
Sindar Corp.	106
Foster D. Snell Inc.	54
Solvay Sales Div.	38, 39
Spraying Systems Co.	130
John T. Stanley Co.	104
Sterwin Chemicals Inc.	72
Stevens Soap Corp.	118
Stokes & Smith Co.	28
Swift & Co.	152
Synfleur Scientific Labs., Inc.	110
Syntomatic Corp.	113
Tar Residuals, Inc.	59
E. G. Thomssen	54
Hans Tobeson, Inc.	207
Tombarel Products Corp.	139
Trio Chemical Works	97
Turner, Jas. & Co.	127
Ultra Chemical Works	68
Uncle Sam Chemical Co.	74
Ungerer & Co.	4
Union Bag & Paper Corp.	184
U. S. Industrial Chemicals Inc.	2nd Cover
U. S. Testing Co.	114
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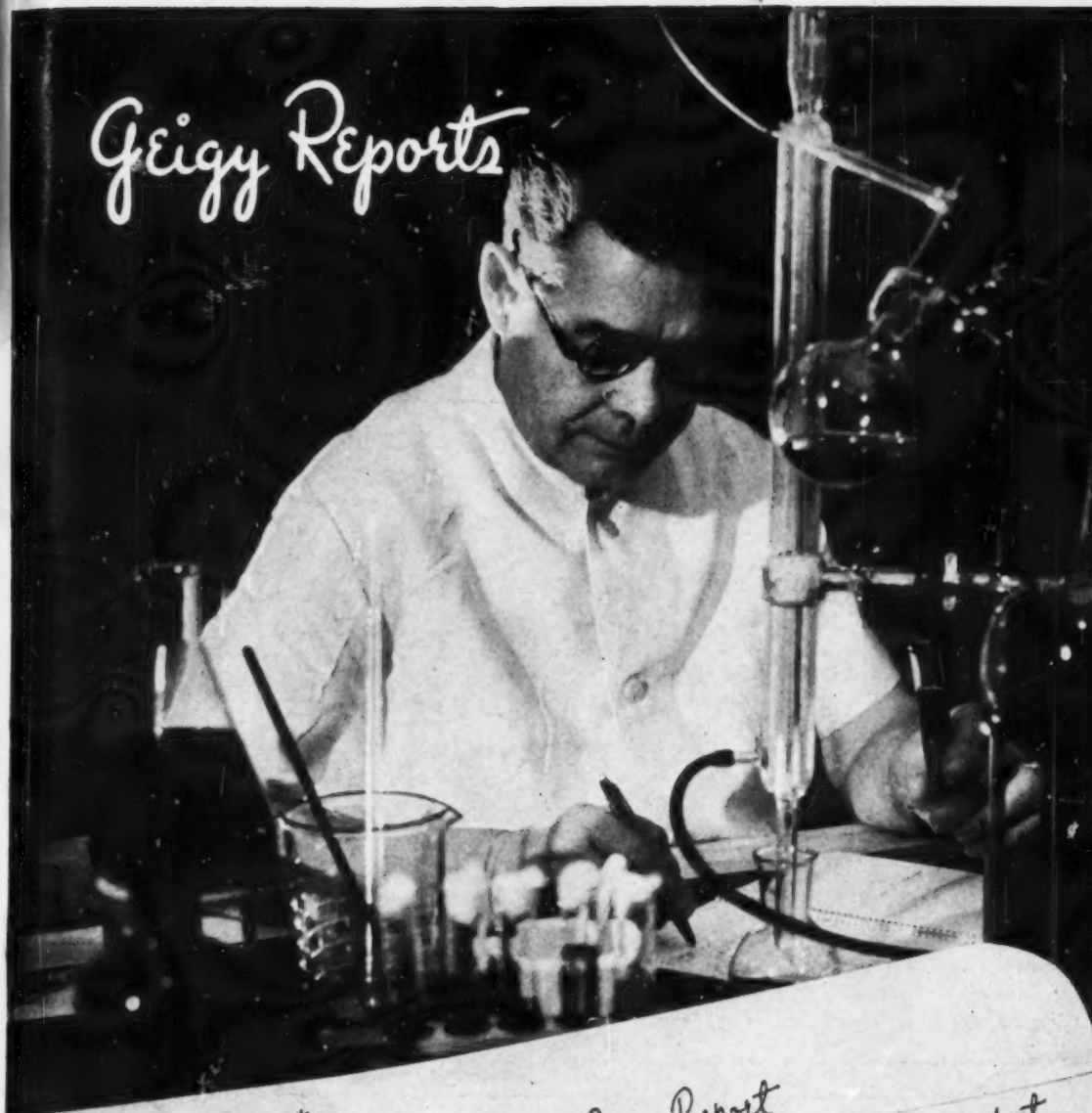
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Laboratory Report #2

Aerosol and Household Spray Report

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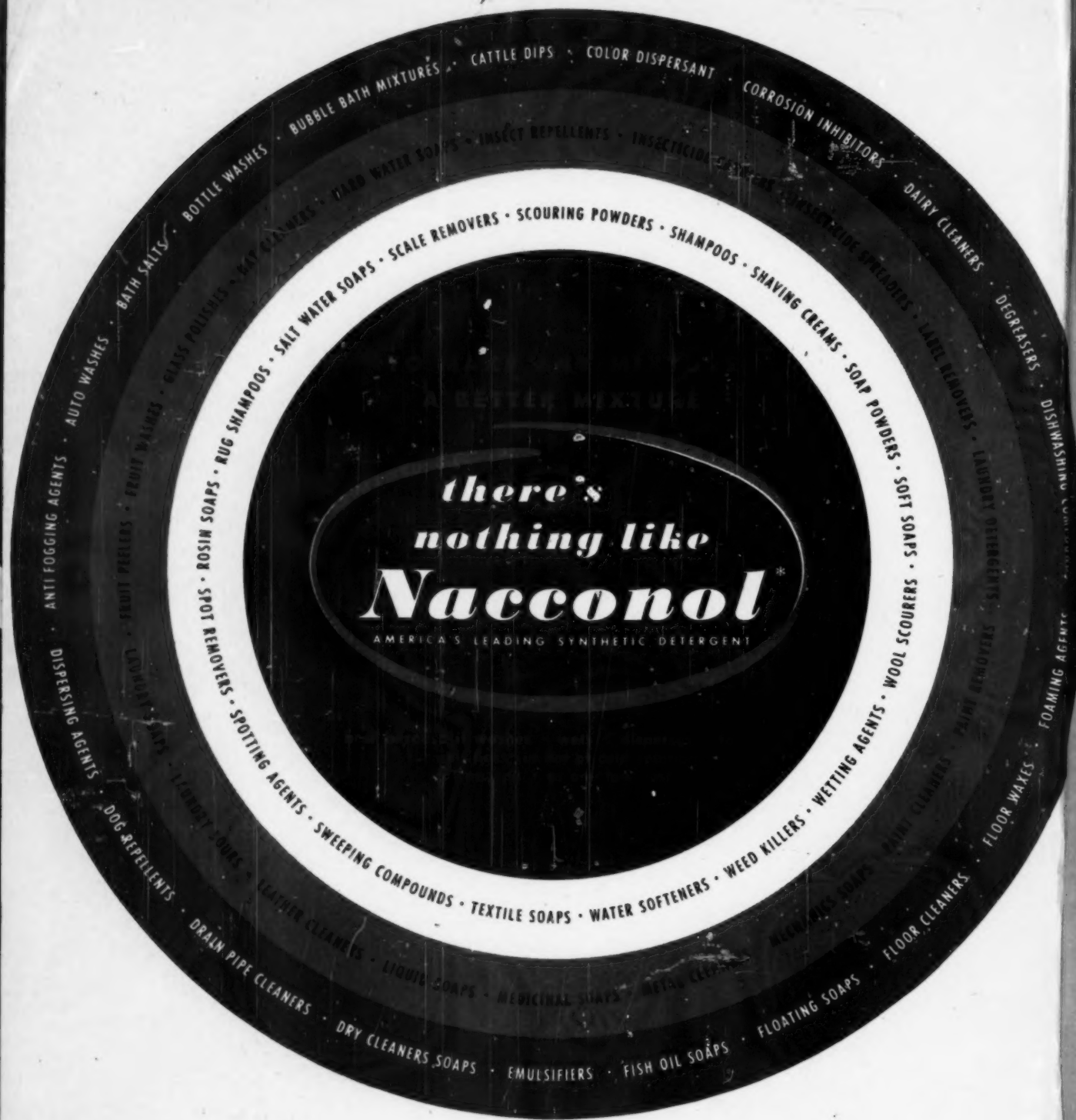


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